

Daily report

06-11-2020

Analysis and prediction of COVID-19 for EU-EFTA-UK and other countries

Situation report 151

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and



Foreword

The present report aims to provide a comprehensive picture of the **pandemic situation of COVID-19** in the EU countries, and to be able to foresee the situation in the next coming days. We provide some figures and tables with several **indexes and indicators** as well as an **Analysis** section that discusses a specific topic related with the pandemic.

As for the predictions, we employ an **empirical model**, verified with the evolution of the number of confirmed cases in previous countries where the epidemic is close to conclude, including all provinces of China. The model does not pretend to interpret the causes of the evolution of the cases but to permit the **evaluation of the quality of control measures made in each state** and a **short-term prediction of trends**. Note, however, that the effects of the measures' control that start on a given day are not observed until approximately 7-14 days later.

We show an individual report with 8 graphs and a summary table with the main indicators for different countries and regions. We are adjusting the model to **countries and regions** with at least 4 days with more than 100 confirmed cases and a current load over 200 cases.

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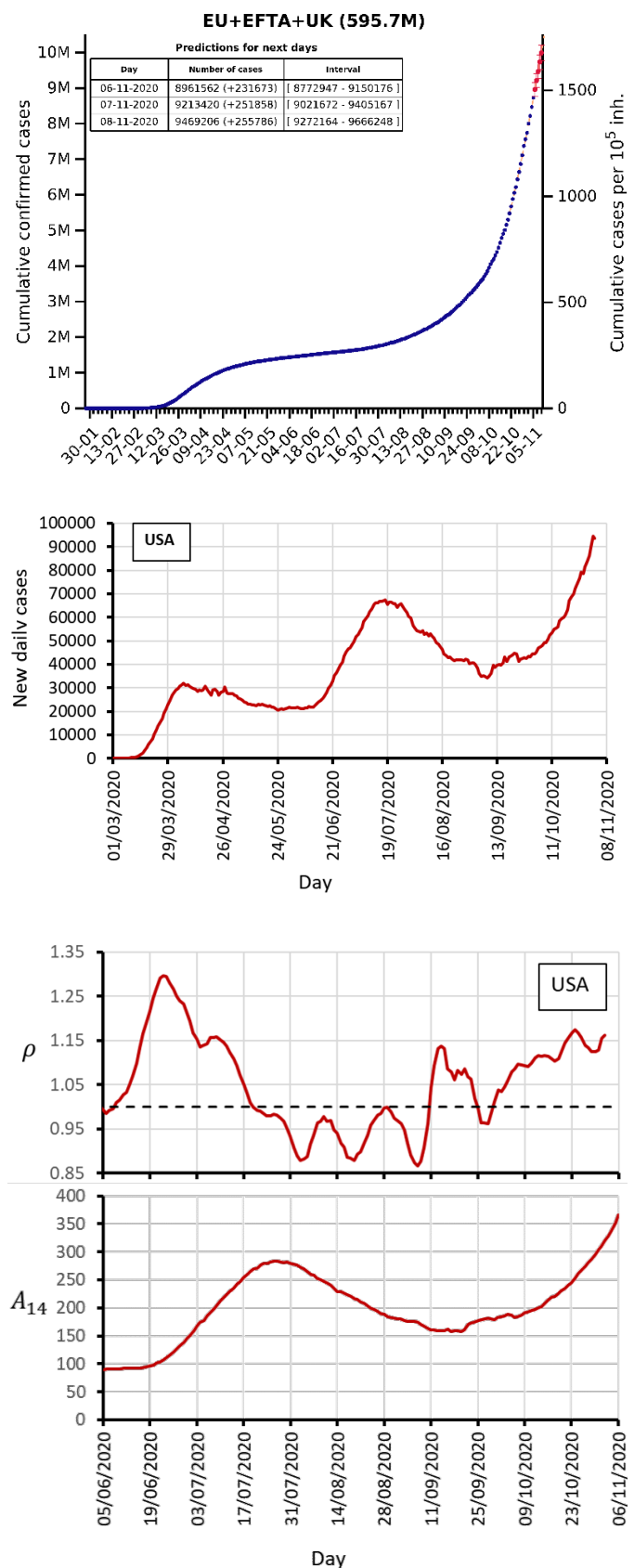
Situation and highlights

Global situation

Hot news are talking about the USA election results. It is also a good time to check how the pandemic is evolving there. The behaviour of the pandemic in the USA can help us to think about the evolution in other contexts. In Europe we are talking about the second wave. In the USA they should talk about the third wave. The plot of the new daily cases shows a first growth from March to the first week of April. The number of new daily cases stops growing but remains significantly high: the first week of June still has about 20,000 new daily cases. Then, it begins a second, very large increase in daily new cases, reaching almost 70,000 new cases each day. In the last days of July, the situation starts improving until the first week of September, when growth becomes evident again. These two growths are clearly visible in the plots of ρ and A_{14} since June 5. Currently, the pandemic continues to progress significantly, now with over 90,000 new cases daily. Since ρ is above 1, the situation will continue to get worse. Certainly, many tests are being performed in the USA and it cannot be compared to other countries with similar incidences where the epidemiological effort is lower. Nevertheless, if they fail to decrease ρ below 1 and fail to maintain it long enough so that A_{14} decreases, the worsening will be progressive and may cause significant problems again. In many EU+EFTA+UK countries we are talking about the 2nd wave. If we do not carefully prepare the post-wave scenario, we can follow what we are seeing in the USA in a succession of consecutive waves.

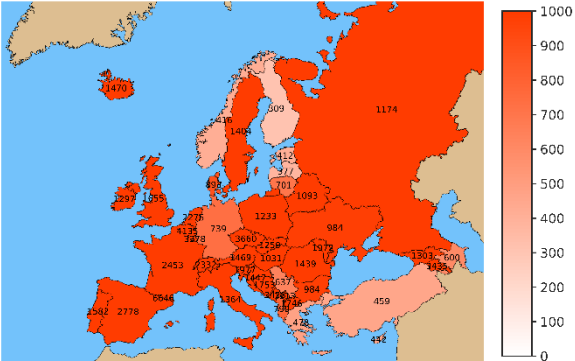
Highlights

- Slovenia and the Netherlands could be joining Czech Republic and Belgium in a decreasing trend given by a $\rho_7 < 1$. Iceland and Ireland are also consolidated in this trend. Only Greece and Estonia show a $\rho_7 > 1.5$, while other European countries are ranging between $\rho_7 = 1$ and $\rho_7 = 1.5$.
- 14-day cumulative incidence is above 200 per 10^5 inhabitants in 26 out of 32 countries, Greece being the last country that has overcome this threshold. These huge incidences point to a long decreasing period, once the peaks are reached.



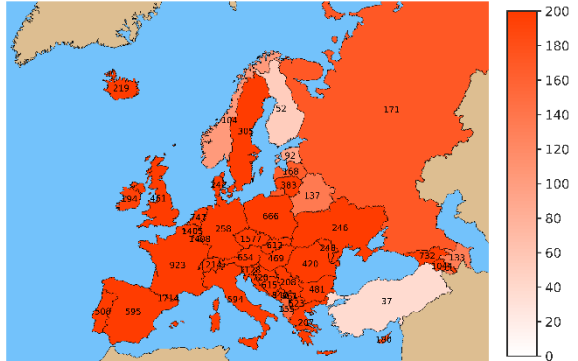
- Cumulative incidence: total number of reported cases per 100,000 inhabitants
- A_{14} : Cumulative incidence last 14 days per 100,000 inhabitants (active cases)
- ρ_7 : Empiric reproduction number
- EPG: Effective Potential Growth ($EPG = A_{14} \cdot \rho_7$)

Cumulative incidence

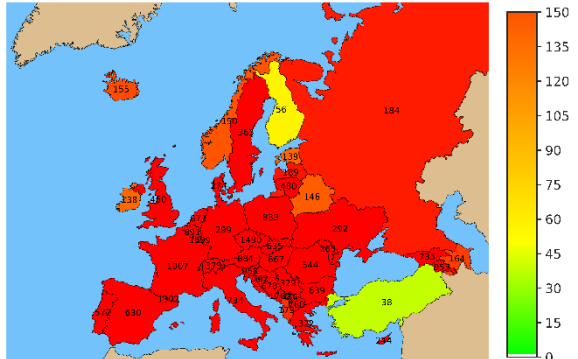
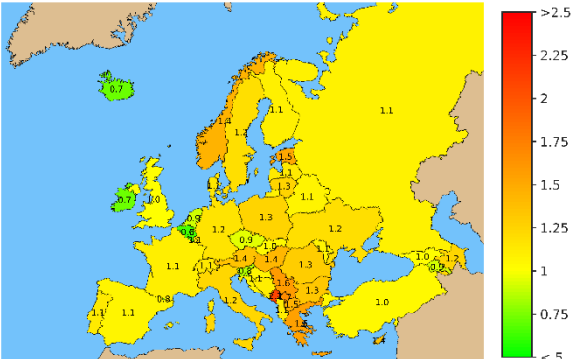


ρ_7

A₁



EPG



Tables of current situation in EU countries. Colour scale is indicated in each legend.

Incidence, mortality and epidemiological indexes.

Country	Reported data						Indexes		
	14-day attack rate /10 ⁵ inh.	Active cases (last 14 days)	Attack rate /10 ⁵ inh.	Cumulative cases	Mortality /10 ⁵ inh.	Cumulative deaths	$\rho_7^{(1)}$	EPG ⁽²⁾	Biocom-Cov degree
Czech Republic	1,577.0	168,880	3,660.0	391,945	40.4	4,330	0.94	1,490	9
Luxembourg	1,408.0	8,814	3,378.2	21,147	28.3	177	1.14	1,599	9
Belgium	1,405.0	162,836	4,135.1	479,246	108.0	12,520	0.63	891	9
Switzerland	1,214.0	105,070	2,331.7	201,801	27.0	2,334	1.13	1,375	9
Slovenia	1,127.6	23,443	1,976.7	41,094	16.4	341	0.85	958	9
Liechtenstein	1,088.2	415	1,843.4	703	7.9	3	1.09	1,181	9
France	922.8	602,324	2,453.3	1,601,367	59.8	39,037	1.09	1,007	9
Netherlands	746.5	127,914	2,276.2	390,023	45.3	7,759	0.91	677	9
Croatia	720.2	29,565	1,447.3	59,415	16.6	683	1.06	762	9
Poland	665.8	251,993	1,233.1	466,679	18.1	6,842	1.25	833	9
Austria	654.4	58,941	1,468.7	132,280	13.9	1,251	1.35	884	9
Slovakia	611.8	33,404	1,258.9	68,734	5.2	286	1.04	635	9
Spain	595.5	280,035	2,777.9	1,306,316	81.8	38,486	1.06	630	9
Italy	594.0	359,153	1,364.3	824,879	66.5	40,192	1.24	734	9
Portugal	508.1	51,809	1,582.4	161,350	26.9	2,740	1.13	572	9
Bulgaria	480.9	33,415	983.6	68,345	21.8	1,518	1.33	639	9
Hungary	469.4	45,347	1,031.3	99,625	23.3	2,250	1.42	667	9
United Kingdom	460.7	312,730	1,654.5	1,123,197	70.9	48,120	1.00	460	9
Romania	420.0	80,798	1,438.9	276,802	39.2	7,540	1.29	544	9
Lithuania	383.1	10,428	701.3	19,091	6.8	186	1.25	480	9
Malta	368.0	1,625	1,531.9	6,764	15.9	70	1.23	452	9
Sweden	304.7	30,771	1,403.7	141,764	59.4	6,002	1.19	363	9
Germany	257.6	215,798	738.9	619,089	13.2	11,096	1.16	299	9
Denmark	241.5	13,990	893.5	51,753	12.7	733	1.14	274	9
Iceland	219.5	749	1,470.2	5,017	5.3	18	0.71	155	8
Greece	207.1	21,591	477.9	49,807	6.7	702	1.55	322	9
Ireland	193.8	9,570	1,297.1	64,046	39.1	1,933	0.71	138	8
Cyprus	180.5	2,179	441.7	5,333	2.2	27	1.35	244	9
Latvia	167.6	3,161	377.4	7,119	4.7	88	1.13	189	8
Norway	103.5	5,611	416.4	22,575	5.2	284	1.45	150	8
Estonia	91.7	1,217	411.9	5,464	5.5	73	1.52	139	8
Finland	51.7	2,864	309.0	17,119	6.5	361	1.09	56	6

Colour scale							
>150.0	Worst	Worst	Worst	Worst	Worst	>2.0	>150
0.0	Best	Best	Best	Best	Best	0.0	0

Table of current situation in some EU provinces. Colour scale is indicated in each legend.

Province	Reported data						Indexes		
	14-day attack rate /10 ⁵ inh.	Active cases (last 14 days)	Attack rate /10 ⁵ inh.	Cumulative cases	Mortality /10 ⁵ inh.	Cumulative deaths	$\rho_7^{(1)}$	EPG ⁽²⁾	Biocom-Cov degree
Brussels	2,072.1	25,031	5,557.0	67,128	159.4	1,926	0.69	1,426	9
Prague	1,213.8	15,439	3,989.5	50,746	NA	NA	0.76	926	9
Bern	835.7	8,649	1,434.2	14,844	13.4	139	1.15	958	9
North Holland	703.3	20,065	2,602.8	74,259	38.1	1,086	0.80	562	9
Wien	553.0	10,491	1,791.0	33,976	19.7	373	1.23	679	9
Lazio	505.1	29,697	1,032.6	60,707	23.3	1,370	1.16	587	9
Lisbon	477.6	13,529	2,177.6	61,690	36.7	1,039	1.11	528	9
Madrid	390.2	25,913	4,682.3	310,936	160.1	10,631	0.91	357	9
Berlin	388.2	14,630	991.2	37,357	7.6	287	1.11	431	9
London	311.7	27,935	1,217.9	109,138	NA	NA	0.95	295	9

Colour scale							
>150.0	Worst	Worst	Worst	Worst	Worst	>2.0	>150
0.0	Best	Best	Best	Best	Best	0.0	0

⁽¹⁾ ρ_7 is the average of 7 consecutive ρ , but can still fluctuate. ⁽²⁾ EPG stands for Effective Growth Potential, which is the product of reported cumulative incidence of last 14 days per 10⁵ inhabitants by ρ_7 (empiric reproduction number). Biocom-Cov degree is an epidemiological situation scale based on the level of last week's mean daily new cases (<https://upcommons.upc.edu/handle/2117/189661>, <https://upcommons.upc.edu/handle/2117/189808>).

Situation of hospitalisations and ICUs in some EU countries. The analysis is done for those countries that report a historical series with current (active) number of patients in hospitals and ICUs¹. We provide:

- Current active hospitalisations and patients in ICU per 100,000 inhabitants.
- Current absolute number of active hospitalisations and patients in ICU.
- Rate of occupation of curative care hospital beds by Covid-19 patients (data from Eurostat 2018²), only for hospitalisations.
- Current rate of occupation with regards to the maximum Covid-19 occupation reached in this pandemic.
- Weekly increase in Covid-19 patients in hospitals and ICUs.

Country	Hospitalisations					Intensive Care Units			
	Active /10 ⁵ inh.	Active (total)	Occupation (Eurostat 2018) (%)	Occupation (historical maximum) (%)	Week-to-week Growth (%)	Active /10 ⁵ inh.	Active (total)	Occupation (historical maximum) (%)	Week-to-week Growth (%)
Belgium	62.8	7282	12.8	97.3	27.4	12.3	1428	100.0	41.7
Hungary	56.8	5489	13.2	100.0	49.2	4.0	391	100.0	34.5
Slovenia	51.4	1069	12.5	100.0	48.8	8.1	168	100.0	47.8
Italy	43.9	26520	17.0	80.4	40.6	4.2	2515	61.8	42.6
France	43.5	28426	14.0	88.0	33.3	6.5	4230	59.9	29.3
Switzerland	40.6	3514	11.4	100.0	47.8	5.0	436	100.0	72.6
Slovakia	31.9	1742	6.6	100.0	23.5	2.1	112	94.1	21.9
Austria	25.9	2330	4.9	100.0	51.6	4.5	407	100.0	56.7
Portugal	23.2	2362	7.0	100.0	28.7	3.1	320	98.5	22.6

Colour scale
>20%
-20%

Colour scale
>20%
-20%

¹ <https://github.com/ec-jrc/COVID-19>

² https://ec.europa.eu/eurostat/databrowser/view/hlth_rs_bds/default/table?lang=en

Situation and trends in some European regions³

Table of current situation in Spain by region. Colour scale is indicated in each legend.

Country	Reported data						Indexes		
	14-day attack rate /10 ⁵ inh.	Active cases (last 14 days)	Attack rate /10 ⁵ inh.	Cumulative cases	Mortality /10 ⁵ inh.	Cumulative deaths	$\rho_7^{(1)}$	EPG ⁽²⁾	Biocom-Cov degree
Melilla	1,298.5	1,100	3,620.4	3,067	14.2	12	0.92	1,192	9
Navarra	1,146.1	7,449	5,134.7	33,374	108.3	704	0.89	1,018	9
Aragon	1,014.5	13,399	4,369.1	57,707	124.0	1,638	1.05	1,068	9
Castilla y Leon	871.8	20,994	3,636.1	87,560	151.4	3,647	1.05	919	9
Ceuta	800.3	679	2,113.3	1,793	24.8	21	1.05	839	9
La Rioja	774.9	2,430	4,104.5	12,871	147.3	462	0.94	729	9
Catalunya	759.5	57,456	3,097.6	234,334	94.2	7,125	0.96	731	9
Euskadi	655.7	14,281	3,160.4	68,835	96.8	2,109	1.11	725	9
Murcia	647.8	9,637	2,571.4	38,255	11.9	177	0.97	626	9
Castilla-La Mancha	570.7	11,617	3,308.0	67,335	162.5	3,308	1.09	620	9
Extremadura	564.5	6,014	1,935.5	20,620	66.6	710	1.16	655	9
Andalucía	563.1	47,450	1,700.2	143,267	28.7	2,415	1.10	621	9
Asturias	417.7	4,270	1,244.1	12,718	42.5	434	1.19	499	9
Madrid	390.2	25,913	4,682.3	310,936	160.1	10,631	0.91	357	9
Cantabria	388.9	2,262	1,759.7	10,236	42.3	246	1.03	400	9
Galicia	314.1	8,481	1,313.4	35,467	33.0	892	1.17	368	9
Comunitat Valenciana	270.7	13,468	1,332.6	66,289	36.5	1,815	0.90	244	9
Baleares	216.7	2,574	1,589.7	18,883	30.9	367	1.06	231	9
Canarias	71.4	1,577	790.3	17,443	12.9	285	0.87	62	6

Colour scale							
>150.0	Worst	Worst	Worst	Worst	Worst	>2.0	>150
0.0	Best	Best	Best	Best	Best	0.0	0

Table of current situation in Sweden by region. Colour scale is indicated in each legend.

Country	Reported data				Indexes		
	14-day attack rate /10 ⁵ inh.	Active cases (last 14 days)	Attack rate /10 ⁵ inh.	Cumulative cases	$\rho_7^{(1)}$	EPG ⁽²⁾	Biocom-Cov degree
Jönköping	2,130.9	2,003	8,196.8	7,705	2.15	4,589	9
Örebro	1,600.6	2,497	3,818.6	5,957	1.60	2,558	9
Kalmar	1,438.9	518	4,113.9	1,481	2.10	3,021	9
Uppsala	1,248.3	2,147	4,036.6	6,943	1.84	2,292	9
Stockholm	583.3	13,673	1,775.4	41,615	1.84	1,074	9
Kronoberg	524.0	1,048	1,453.0	2,906	1.60	838	9
Östergötland	501.9	2,319	1,465.4	6,770	1.72	865	9
Skåne	438.0	5,966	928.1	12,641	1.76	769	9
Västmanland	401.8	1,101	1,628.1	4,461	2.24	902	9
Västra Götaland	401.2	6,860	1,642.4	28,085	2.01	804	9
Dalarna	385.0	1,105	1,343.6	3,856	1.92	738	9
Södermanland	376.6	964	1,401.2	3,587	2.30	868	9
Halland	360.8	1,187	1,231.6	4,052	2.10	758	9
Gotland	301.7	178	922.0	544	3.05	919	9
Norrbottn	287.6	719	1,048.0	2,620	2.05	591	9
Gävleborg	239.7	688	1,475.3	4,234	2.62	628	9
Västerbotten	238.0	652	654.4	1,793	3.17	754	9
Värmland	213.9	601	699.6	1,966	2.01	430	9
Blekinge	191.3	306	721.3	1,154	1.81	345	9
Jämtland	182.3	237	1,335.4	1,736	0.91	166	8
Västernorrland	146.9	360	961.2	2,355	2.41	355	9

Colour scale					
>150.0	Worst	Worst	Worst	>2.0	>150
0.0	Best	Best	Best	0.0	0

³ <https://github.com/ec-jrc/COVID-19/tree/master/data-by-region>

Table of current situation in Belgium by region. Colour scale is indicated in each legend.

Country	Reported data						Indexes		
	14-day attack rate /10 ⁵ inh.	Active cases (last 14 days)	Attack rate /10 ⁵ inh.	Cumulative cases	Mortality /10 ⁵ inh.	Cumulative deaths	$\rho_7^{(1)}$	EPG ⁽²⁾	Biocom-Cov degree
Wallonia	2,959.6	107,849	5,709.6	208,057	127.1	4,632	0.92	2,715	9
Brussels	2,164.9	26,152	5,469.0	66,066	157.3	1,900	0.79	1,700	9
Flanders	1,184.9	78,074	2,828.6	186,374	88.0	5,799	0.87	1,028	9

Colour scale							
>150.0	Worst	Worst	Worst	Worst	Worst	>2.0	>150
0.0	Best	Best	Best	Best	Best	0.0	0

Table of current situation in Italy by region. Colour scale is indicated in each legend.

Country	Reported data						Indexes		
	14-day attack rate /10 ⁵ inh.	Active cases (last 14 days)	Attack rate /10 ⁵ inh.	Cumulative cases	Mortality /10 ⁵ inh.	Cumulative deaths	$\rho_7^{(1)}$	EPG ⁽²⁾	Biocom-Cov degree
Valle d'Aosta	1,307.1	1,647	3,145.2	3,963	154.8	195	1.05	1,368	9
Bolzano	1,104.4	5,754	2,221.1	11,572	63.3	330	1.48	1,631	9
Lombardia	987.0	99,302	2,414.7	242,947	180.1	18,118	1.18	1,160	9
Piemonte	866.8	37,758	2,053.7	89,458	104.4	4,549	1.19	1,032	9
Liguria	844.2	13,093	2,221.3	34,452	121.1	1,879	1.09	917	9
Umbria	825.9	7,284	1,540.9	13,591	19.7	174	1.11	917	9
Toscana	798.4	29,779	1,546.4	57,680	40.3	1,502	1.09	869	9
Campania	753.3	43,704	1,344.5	78,009	13.7	796	1.27	958	9
Veneto	630.9	30,952	1,469.5	72,092	51.8	2,543	1.23	776	9
Trento	544.1	2,927	1,942.9	10,453	85.3	459	1.16	629	9
Emilia-Romagna	508.5	22,676	1,503.5	67,041	106.6	4,752	1.27	644	9
Lazio	505.1	29,697	1,032.6	60,707	23.3	1,370	1.16	587	9
Friuli Venezia Giulia	488.6	5,937	1,098.9	13,352	35.8	435	1.09	531	9
Abruzzo	471.0	6,180	1,029.3	13,505	44.5	584	1.18	558	9
Marche	459.7	7,011	1,157.8	17,656	68.0	1,037	1.23	566	9
Molise	350.7	1,073	718.6	2,199	14.7	45	1.16	408	9
Basilicata	285.1	1,602	564.4	3,172	10.5	59	1.67	476	9
Sicilia	270.2	13,509	576.5	28,825	12.6	628	1.33	360	9
Puglia	260.1	10,481	592.7	23,881	19.9	802	1.28	332	9
Sardegna	254.7	4,177	695.9	11,412	15.2	249	1.15	292	9
Calabria	167.9	3,269	344.8	6,714	6.8	132	1.22	205	8

Colour scale							
>150.0	Worst	Worst	Worst	Worst	Worst	>2.0	>150
0.0	Best	Best	Best	Best	Best	0.0	0

Situation and trends in other countries

Country	Reported data						Indexes		
	14-day attack rate /10 ⁵ inh.	Active cases (last 14 days)	Attack rate /10 ⁵ inh.	Cumulative cases	Mortality /10 ⁵ inh.	Cumulative deaths	$\rho_7^{(1)}$	EPG ⁽²⁾	Biocom-Cov degree
United Kingdom	460.7	312,730	1,654.5	1,123,197	70.9	48,120	1.00	460	9
United States of America	362.7	1,200,582	2,903.0	9,608,922	71.0	234,937	1.15	419	9
Argentina	361.5	163,378	2,692.8	1,217,015	72.5	32,766	0.87	313	9
Colombia	251.0	127,707	2,197.2	1,117,977	63.3	32,209	1.02	256	9
Ukraine	246.0	107,588	984.3	430,467	18.1	7,924	1.19	292	9
Russia	171.0	249,552	1,173.7	1,712,858	20.2	29,509	1.08	184	8
Belarus	136.7	12,915	1,093.1	103,295	10.6	998	1.07	146	8
Brazil	125.3	266,395	2,629.9	5,590,025	75.8	161,106	0.70	88	7
Iran	124.0	104,179	779.8	654,936	44.0	36,985	1.19	147	8
Iraq	117.9	47,407	1,217.2	489,571	27.8	11,175	0.90	106	7
Canada	111.8	42,190	665.9	251,338	27.5	10,381	1.11	124	8
Israel	110.2	9,539	3,675.2	318,111	30.5	2,639	0.94	104	7
Qatar	109.6	3,157	4,637.8	133,619	8.1	232	0.89	97	7
Peru	105.7	34,846	2,774.3	914,722	105.3	34,730	0.99	104	7
Chile	101.8	19,451	2,702.3	516,582	75.3	14,404	0.98	100	7
Ecuador	86.9	15,332	973.7	171,783	72.2	12,730	0.69	60	6
Mexico	58.2	75,026	736.2	949,197	72.7	93,772	0.96	56	6
India	48.1	650,412	621.7	8,411,724	9.2	124,985	1.00	48	6
Turkey	37.1	31,292	458.6	386,820	12.6	10,639	1.03	38	5
Philippines	23.6	25,837	355.6	389,725	6.8	7,409	1.02	24	4
Indonesia	17.6	48,255	155.7	425,796	5.2	14,348	0.86	15	3
Saudi Arabia	16.1	5,612	1,003.6	349,386	15.8	5,489	1.06	17	3
Pakistan	6.4	14,035	154.0	340,251	3.1	6,923	1.29	8	3

Colour scale							
>150.0	Worst	Worst	Worst	Worst	Worst	>2.0	>150
0.0	Best	Best	Best	Best	Best	0.0	0

⁽¹⁾ ρ_7 is the average of 7 consecutive ρ , but can still fluctuate. ⁽²⁾ EPG stands for Effective Growth Potential, which is the product of reported cumulative incidence of last 14 days per 10⁵ inhabitants by ρ_7 (empiric reproduction number). Biocom-Cov degree is an epidemiological situation scale based on the level of last week's mean daily new cases (<https://upcommons.upc.edu/handle/2117/189661>, <https://upcommons.upc.edu/handle/2117/189808>).

Analysis: On the effects on mobility and contacts of restriction measures in big cities. Insights from Catalan epidemiological measures and Barcelona province data (Part II).

On Monday's report¹, we explained the dynamics of the second wave in Catalunya (Spain) and detailed the set of measures that have been implemented:

- **Package 1:** Closure of all bars, restaurants except for personal delivery (no consumption indoors or outdoors) and beauty centers. University lessons at distance except for exams and practical training. Limited the capacity in commercial centers. Recommendation of work at home.
- **Package 2:** Global curfew between 10.00 pm and 6 a.m.
- **Package 3:** Prohibition to enter or exit Catalonia, and to move outside of towns or villages on weekends (from Friday 6.00 a.m. to Monday 6:00 a.m.). Closure of large commercial centers but left opened small business and shops, with capacity limitations. Closure of cinemas and theaters. Non-compulsory education moved partially online (age brackets 16-18).

We showed how the empirical reproduction number started decreasing 10 days after the first package of measures and that is around 1 right now, waiting for the effect of subsequent packages.

We argued that these three packages and their sequential and cumulative implementation can provide important insights regarding **how big cities will respond to similar measures and what kind of reduction levels can be achieved**. What level of visits to different places does the bar/restaurant closure leads to? What about general recommendation of on-line work? What about restriction of movements between towns?

In this report, we present updated mobility data in Barcelona province in an attempt to answer these questions. We separately analyze mobility in working days and in weekends in order to isolate the effects of the measures according to the social framework.

Facebook Data for Good mobility index

Thanks to Facebook Data for Good, we can provide the example of Barcelona that can be useful as a guide for future measures in other big cities. We use the **reduction in mobility index of FB Data for Good**. This index indicates the average number of different places that a person in the sample takes and compares it with a similar day in February 2020. It is important to stress that it only takes into account the people in the same province. So, **it is not a total count of mobility but an index of how people is behaving inside provinces**. This is, the people that remain in a certain province, how do they behave? Do they visit a lot of places or they do not?

Given the sequential nature of the packages applied in Catalonia and the fact that they affect different working days (considered here Tuesday to Thursday) than Fridays or weekends, and that we have now full data until last Tuesday (3rd Novembre), we present here the evolution of the index for working days (Tuesday-Thursday), for Fridays and, finally, for Saturdays.

Effect of measures in working days activity

We start with the evolution during **working days** (mean mobility on the periods Tuesday-Thursday at each week) to check the effects of the first measures. In the first wave, we observe that during a full lock down the reduction in mobility is huge from one day to the next (see March in Figure 1). Most work has to be done at home (if any). In Barcelona, we can assess that changes in mobility are far away from that level. **Purely a**

¹ <https://upcommons.upc.edu/handle/2117/331166>

recommendation of working from home does not seem to have any effect (Figure 1). Companies are not implementing this type of work in a generalized way. If they would have done it, we would have detected even before the first package since the general recommendation of working from home was already issued. It seems clear that if working for home is not compulsory for companies that can do it, there will be no effect for this measure. General recommendations will not have an effect.

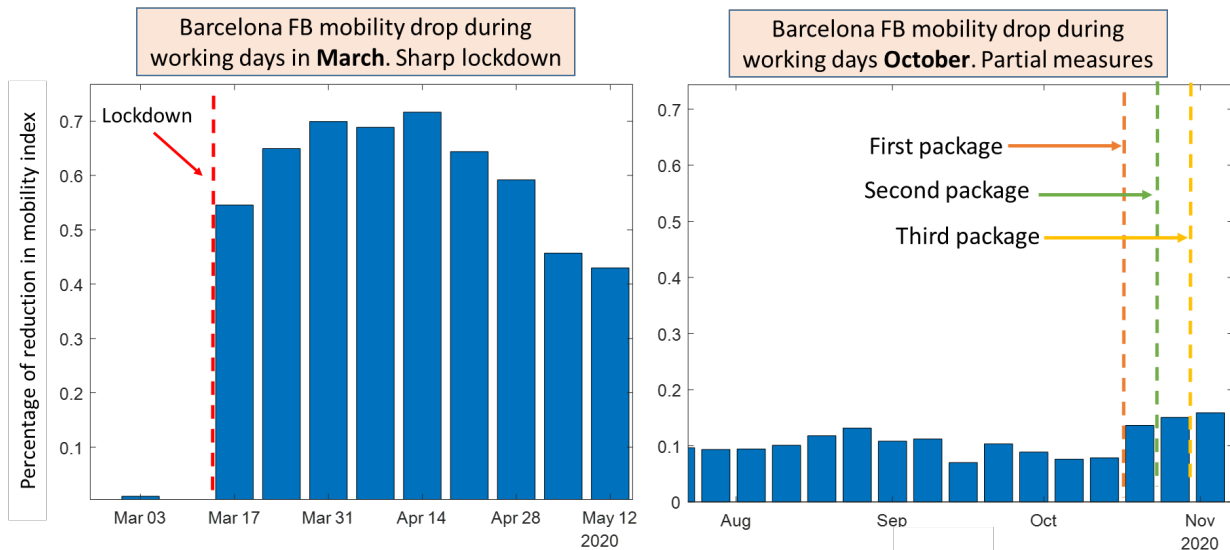


Figure 1: Percentage of reduction in mobility index in working days in Barcelona province (mean of Tuesday-Thursday periods each week). Left: March to May (first wave). Right: mid-July to November (second wave). The main control measures affecting working days are shown.

Closing normal activity of bars/restaurants/universities does indeed reduce mobility, but not by much. The reduction in mobility is similar to summer, when less people are working. It never reaches the typical levels of March, when schools closure and strong confinement measures forced parents to stay at home and work from home even after the hard lockdown was lifted. The night lockdown does not produce a significant effect in week days mobility. The third package of measures does not have an influence in mobility associated to working days, neither.

Effect of measures on Fridays

We proceed now to check the effects on Fridays. A good deal of mobility on Fridays is related with the pursue of a new destination to move from the city to the outskirts. Therefore, when these displacements are forbidden we should expect and extra reduction in the number of contacts and visits to new places on average. And indeed, this is what we have found, as shown in Figure 2.

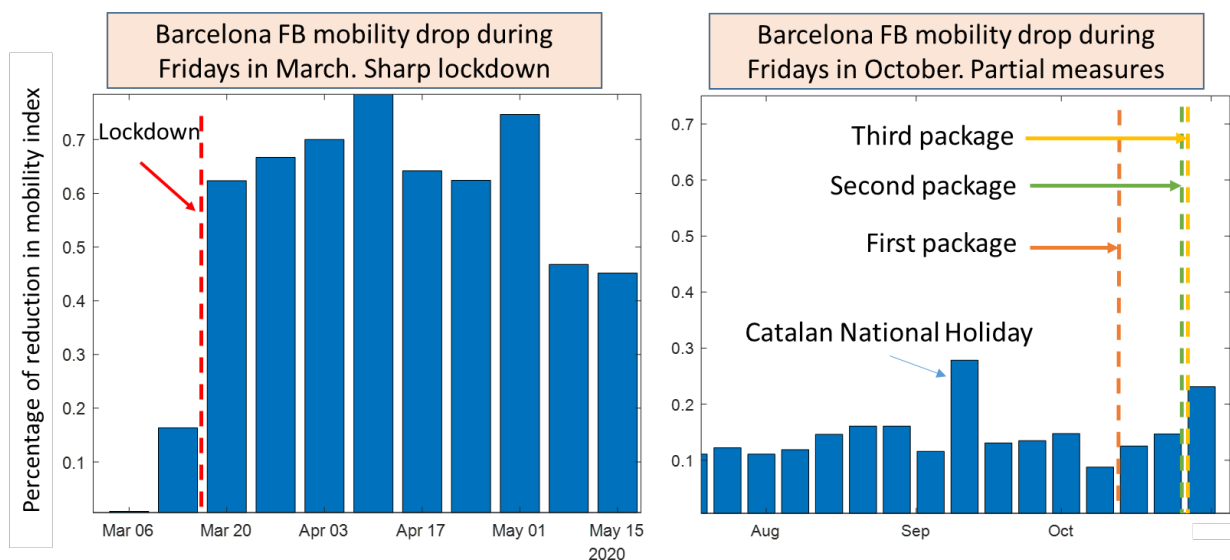


Figure 2: Percentage of reduction in mobility index in Fridays in Barcelona province. Left: March to May (first wave). Right: mid-July to November (second wave). The main control measures affecting Fridays days are shown.

Notice the fact that **working face-to-face is still probably the general rule**, since the drop does not reach the levels presented with a general lockdown. Unless working for home becomes compulsory, the interactions associated with work in the 30-60 years-old bracket will keep being as engine for contacts in the office and out of the office, even without bars and restaurants available. Still, **the reduction in mobility can be compared with the one observed in a national holiday** where people do not go to work and, a majority, stay at home. We must insist that **FB reduction in mobility is not affected by the fact that a lot of people may move out of the city**. If this happens, the index is not affected. We are always measuring what the people staying at the province level do.

Effect of measures on Saturdays

Having checked that mobility around work is hardly affected by these measures and having linked them to the fact that workers move and interact rather normally, we also note that forbidding mobility at night has hardly any effect on working days. We proceed to analyze what happened on Saturday. Here, **work is not present**. With the second and third packages of measures, typical activities of a weekend were forbidden. No bars, no commercial malls, no cinemas neither theatres, no night life, no trip to the neighboring town in the same province to visit friends... only in-city walks or visits to close friends or relatives.

The results are shown in Figure 3, which could not be clearer. **The drop in mobility reaches level close to 40%**, which is similar to those observed at the end of May when the lock down was receding and made more relaxed in terms of allowing walks.

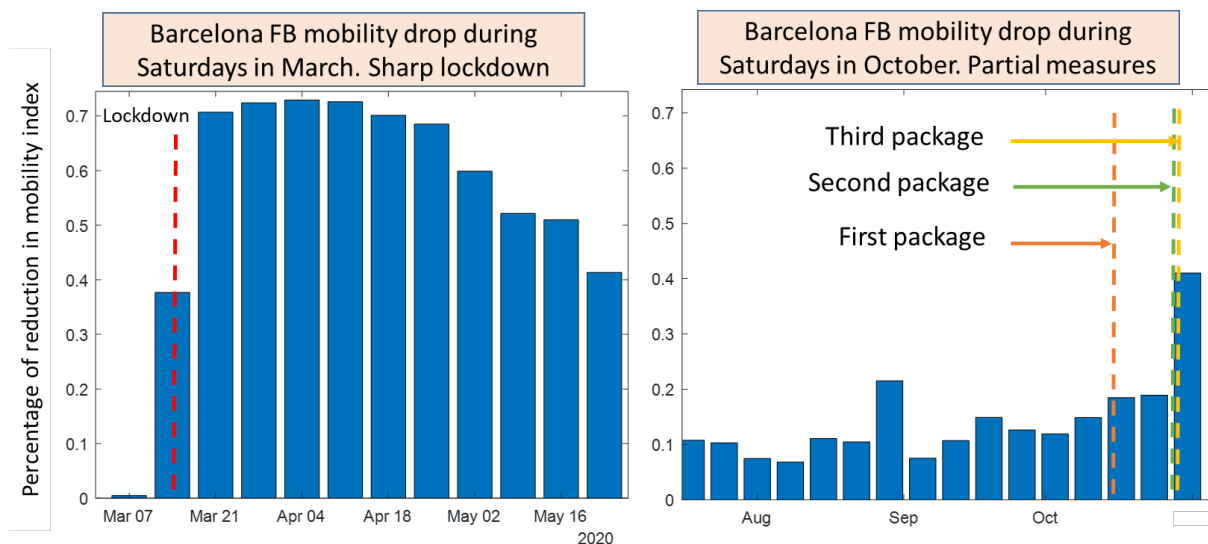


Figure 3: Percentage of reduction in mobility index in Saturdays in Barcelona province. Left: March to May (first wave). Right: mid-July to November (second wave). The main control measures affecting Saturdays days are shown.

The picture that emerges is rather clear. **Forbidding movement outside of your own municipality has strong effects on the number of visits people do. If general social activities are also closed, the activity of walking around or doing exercise is normally done around own area. The final reduction in contacts is thus very large.**

Concluding remarks

We conclude that, while non-compulsory calls to online work and night curfew do not seem to affect interactions very much (though they indeed do), the responses pale in comparison with restrictions in mobility outside your own municipality. This is more the case if leisure activities that involve gatherings like bars, restaurants, cinemas, etc... are close. A lot of people remain around home, walking, jogging or visiting friends/family in-town or just staying at home: Regarding this last point, health authorities asked people to reduce interaction outside of the family bubble. Given the anonymity of the data we cannot be sure if this call was headed, but the reduction in visits to different places was really strong in weekends, without the need of total confinement.

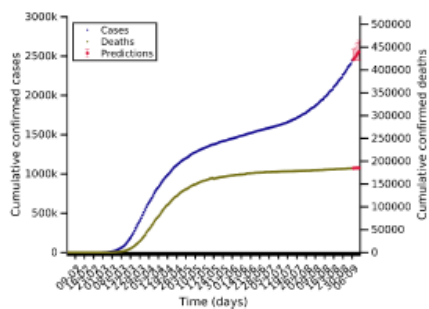
We cannot know for sure how the reduction in mobility will translate in a reduction of contacts. However, when mobility is not changed at all, interactions remain the same and changes in growth are probably going to be difficult to achieve. On the other hand, small changes in mobility, if they target places where a high number of infections happen can have a way larger effect that the mobility indexes will seem to indicate. However, such large effects in mobility for Saturdays indicate that the effects could be similar to the large effects observed in April-May.

We must certainly monitor the situation and see how the epidemics evolve after these measures are implemented. If the weekend measures are shown to be useful and enough, we think that this measure should be on the table of European government as a way to prevent total lockdowns.

Legend: Countries' reports details

Reported cumulative cases (blue) and deaths (brown), together with predictions (red)

EU+EFTA+UK 06-09-2020. Pop: 2632.4M. Cumulative incidence: 93/10⁵

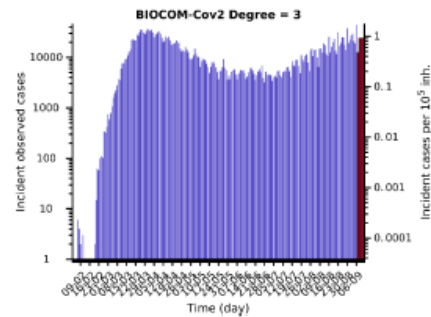
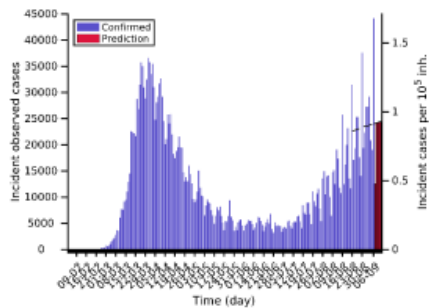


Predictions for next days		
Day	Number of cases	95% confidence interval
07-09-2020	2458068 (+125771)	[2445493 - 2586148]
09-09-2020	2568527 (+242758)	[2440483 - 2638980]
11-09-2020	2553558 (+244355)	[2440483 - 2798209]

Current indicators		
R_{eff}	RPI	CFR
1.3	14	1.17 %

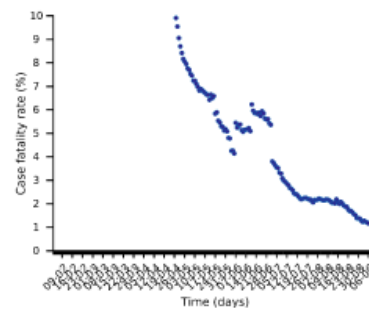
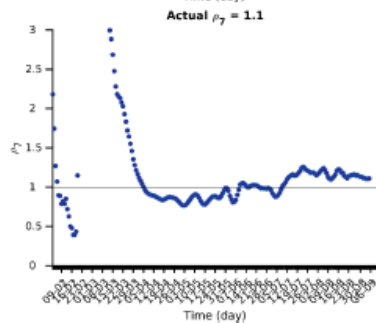
Predictions and indicators

Incident observed cases and predictions.



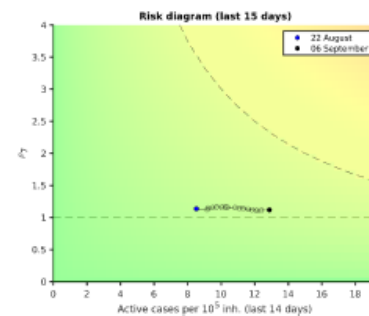
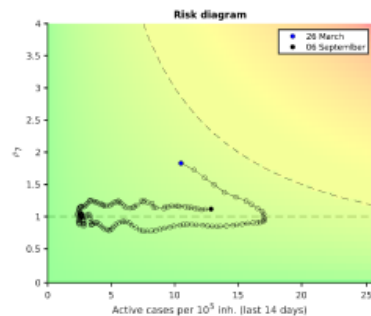
Incident observed cases in a logarithmic scale, with Biocom-Cov degree.

Evolution of empiric reproduction number ρ_T



Case fatality rate

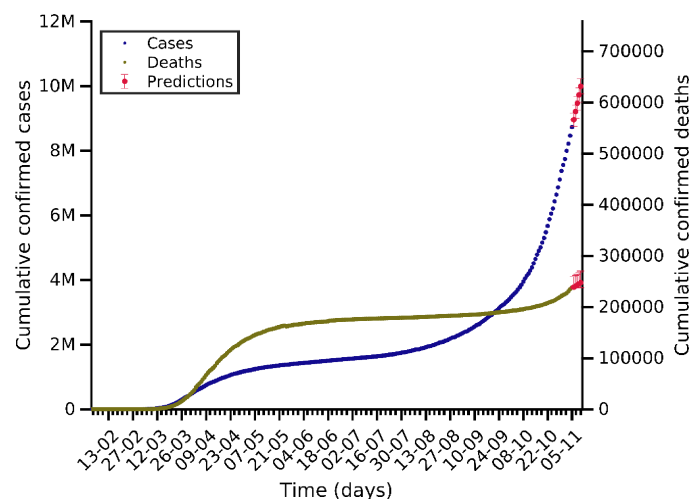
Risk diagram



Risk diagram of last 15 days

**(1) Analysis and prediction of COVID-19
for EU+EFTA+UK**

EU+EFTA+UK 05-11-2020. Pop: 527.9M. Cumulative incidence: 1654/10⁵

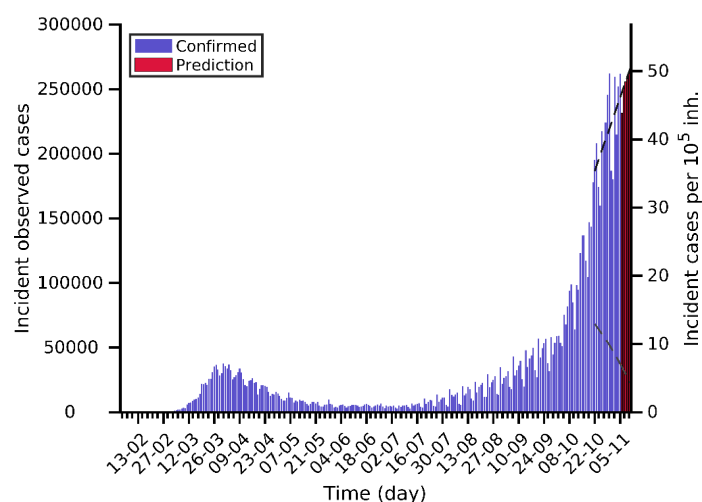


Predictions for next days

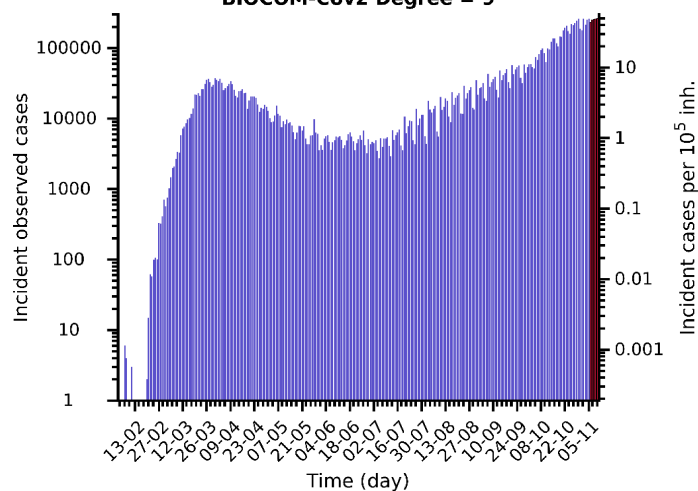
Day	Number of cases	95% Confidence Interval
06-11-2020	8961361 (+231472)	[8759069 - 9163653]
08-11-2020	9468595 (+255610)	[9256518 - 9680672]
10-11-2020	9991691 (+263520)	[9757015 - 10226367]

Current indicators

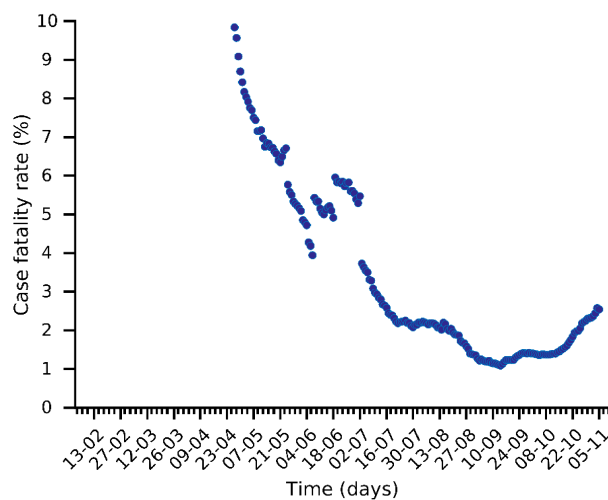
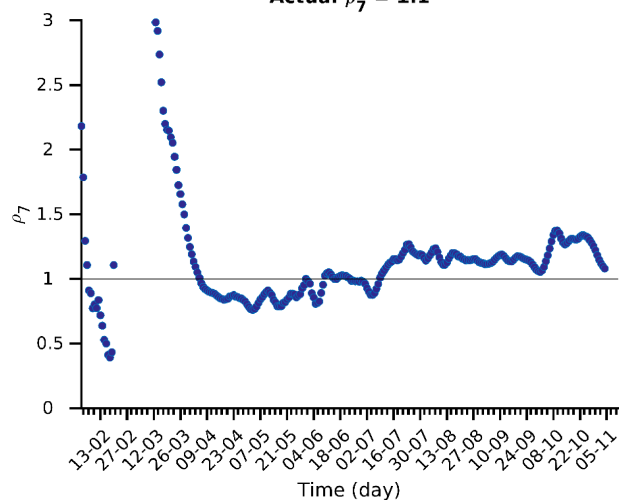
A ₁₄	EPG	CFR
579	625	2.54 %



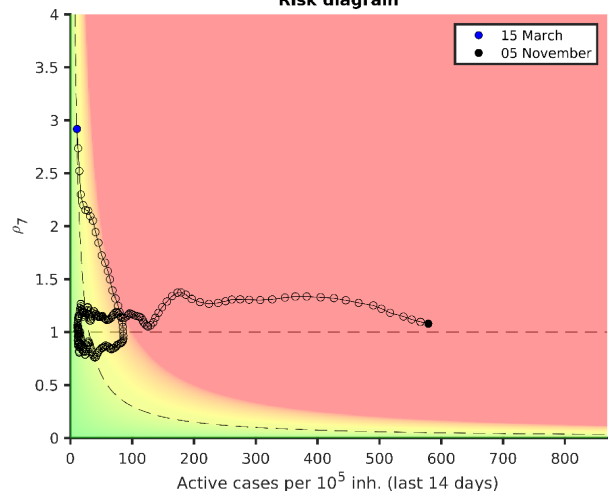
BIOCOM-Cov2 Degree = 9



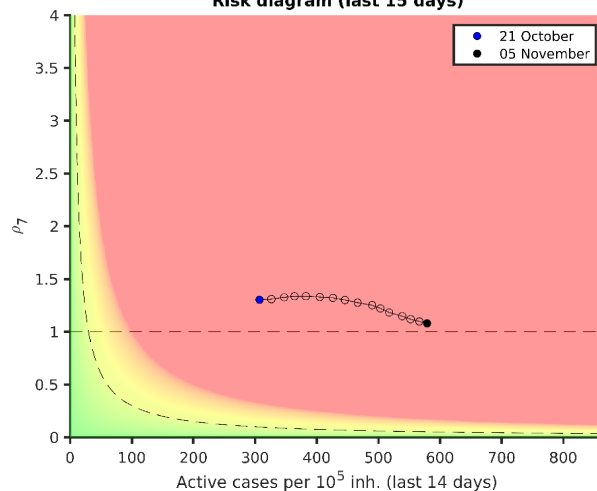
Actual $\rho_7 = 1.1$



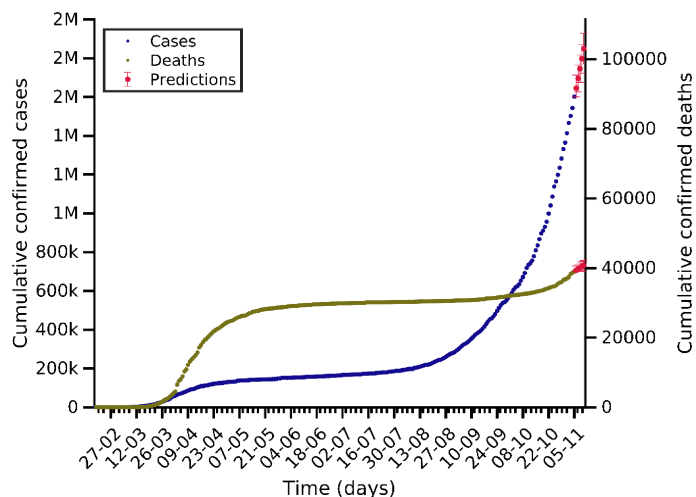
Risk diagram



Risk diagram (last 15 days)



France 05-11-2020. Pop: 65.3M. Cumulative incidence: 2453/10⁵

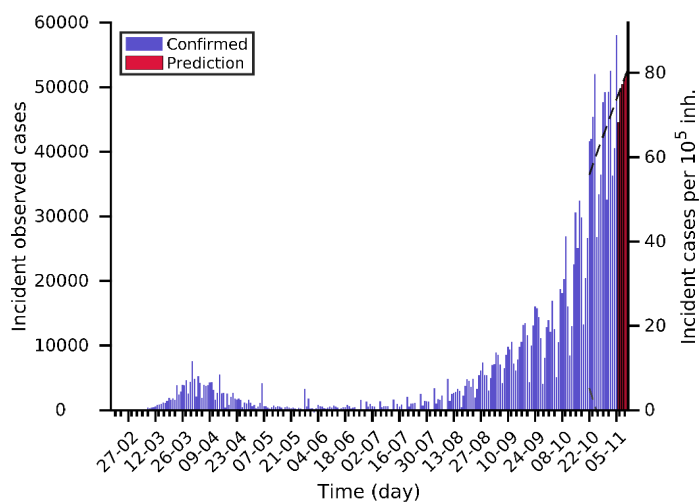


Predictions for next days

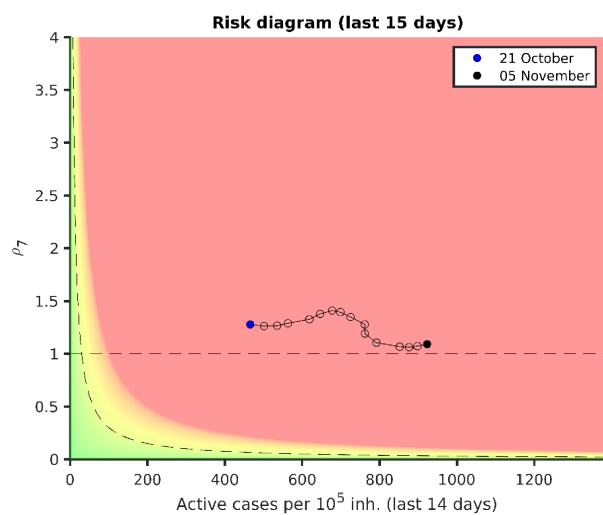
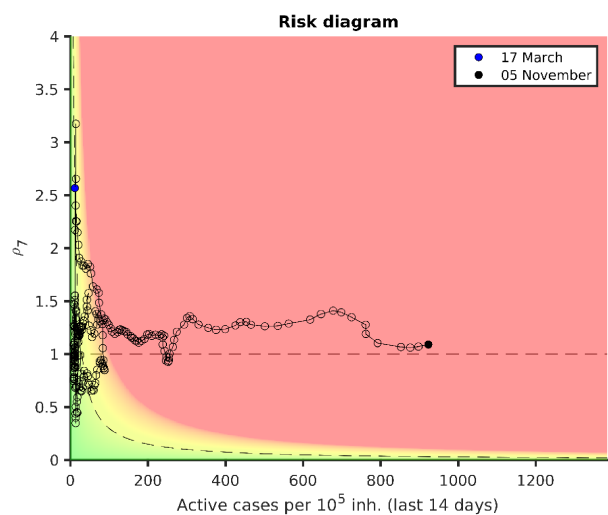
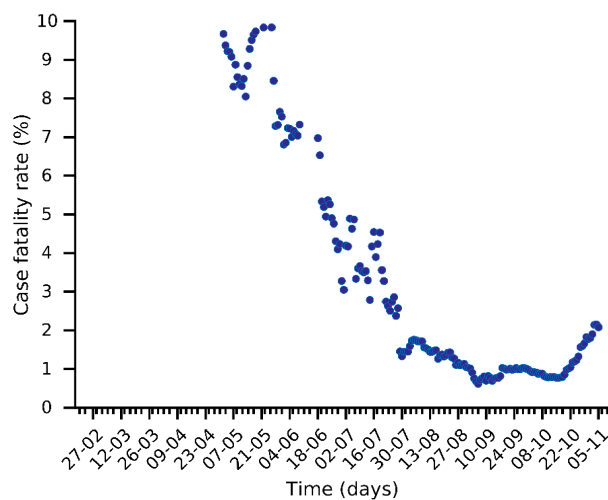
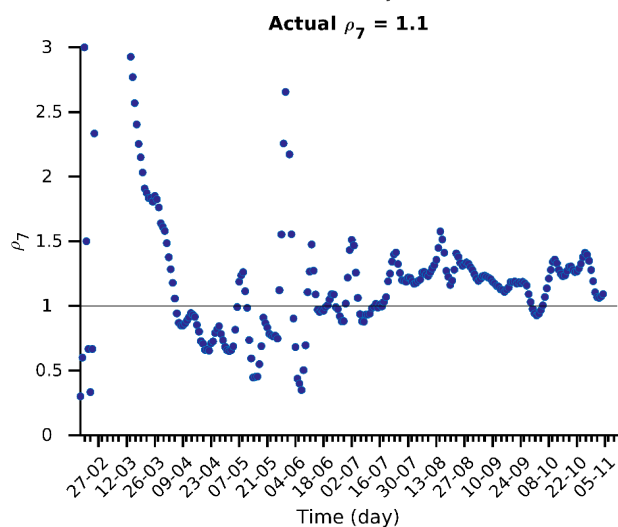
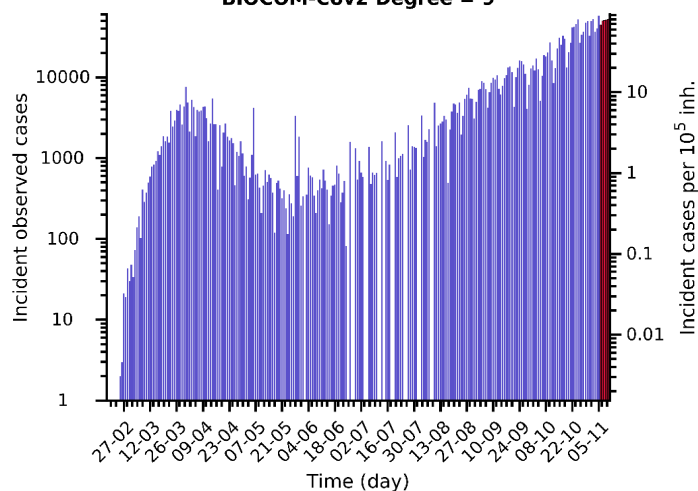
Day	Number of cases	95% Confidence Interval
06-11-2020	1645942 (+44575)	[1601367 - 1713833]
08-11-2020	1746033 (+50436)	[1674830 - 1817237]
10-11-2020	1849212 (+51970)	[1770346 - 1928078]

Current indicators

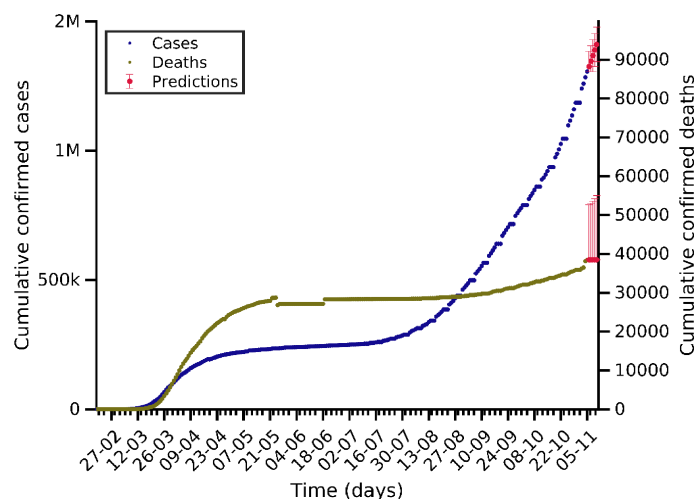
A ₁₄	EPG	CFR
923	1007	2.08 %



BIOCOM-Cov2 Degree = 9



Spain 05-11-2020. Pop: 47.0M. Cumulative incidence: 2778/10⁵

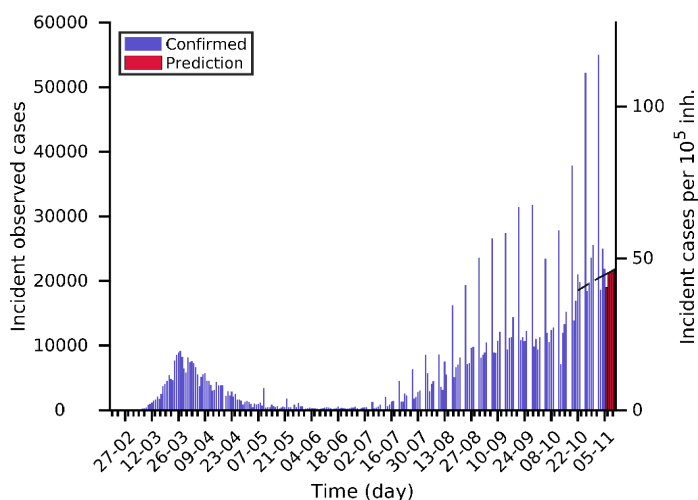


Predictions for next days

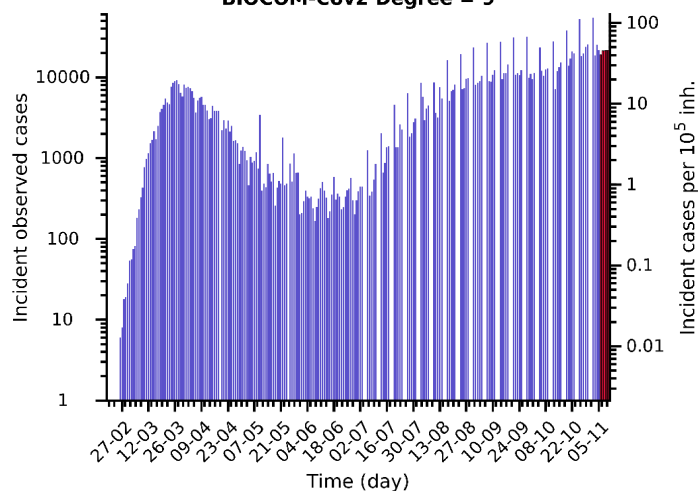
Day	Number of cases	95% Confidence Interval
06-11-2020	1325320 (+19004)	[1306316 - 1384087]
08-11-2020	1367990 (+21413)	[1306673 - 1429307]
10-11-2020	1411277 (+21720)	[1344298 - 1478256]

Current indicators

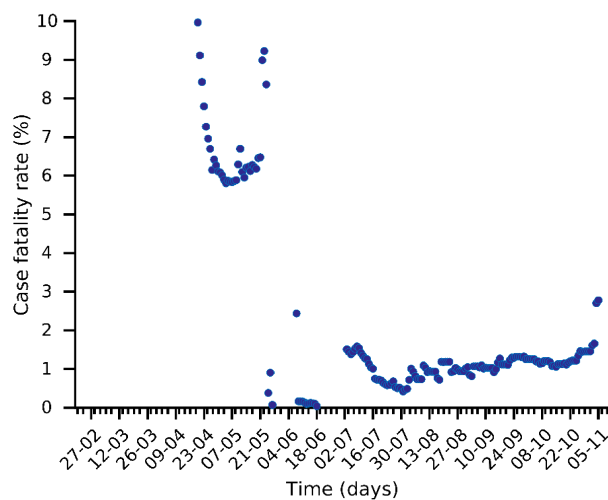
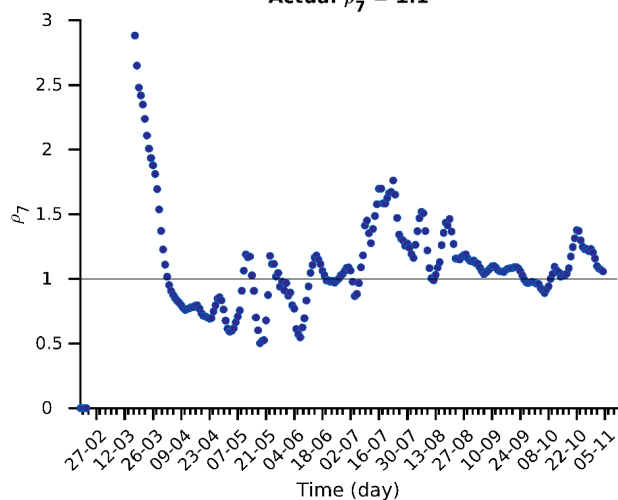
A ₁₄	EPG	CFR
595	630	2.78 %



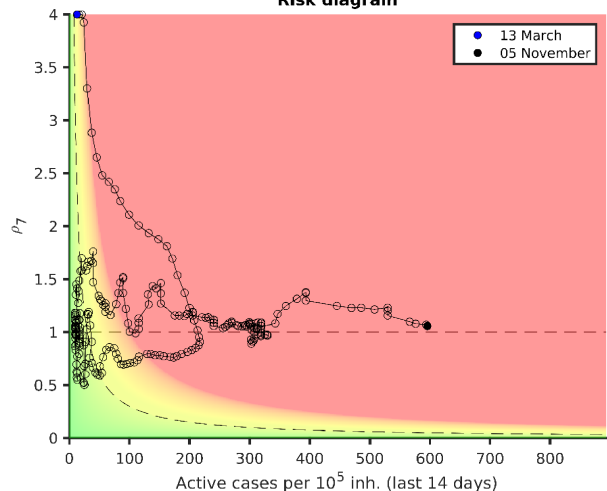
BIOCOM-Cov2 Degree = 9



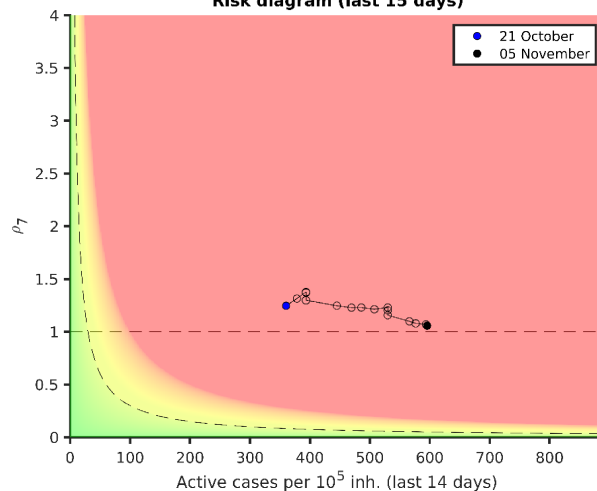
Actual $\rho_7 = 1.1$



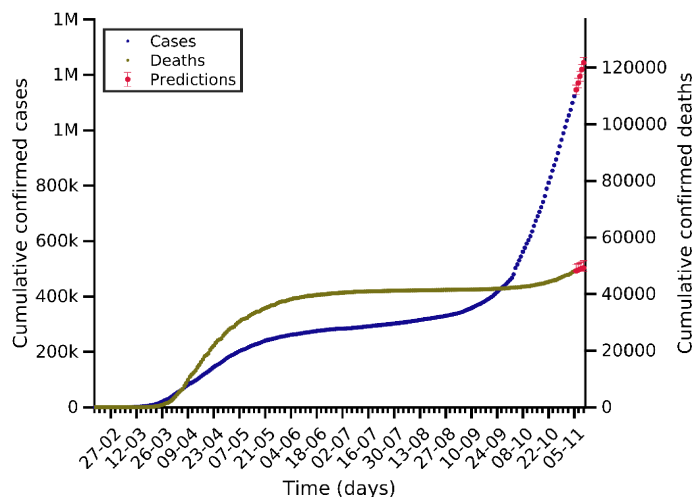
Risk diagram



Risk diagram (last 15 days)



UK 05-11-2020. Pop: 67.9M. Cumulative incidence: 1655/10⁵

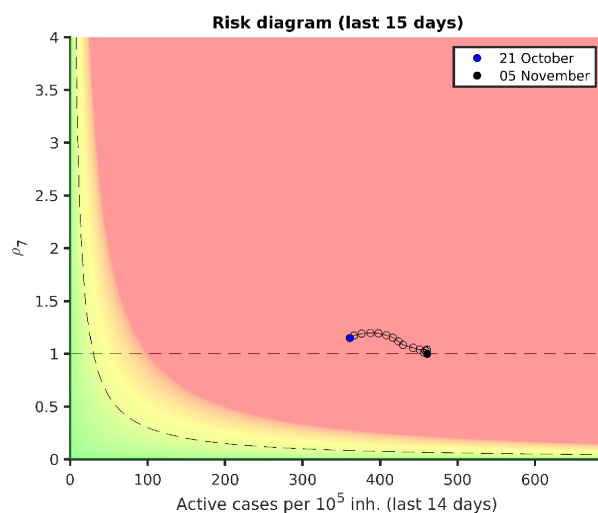
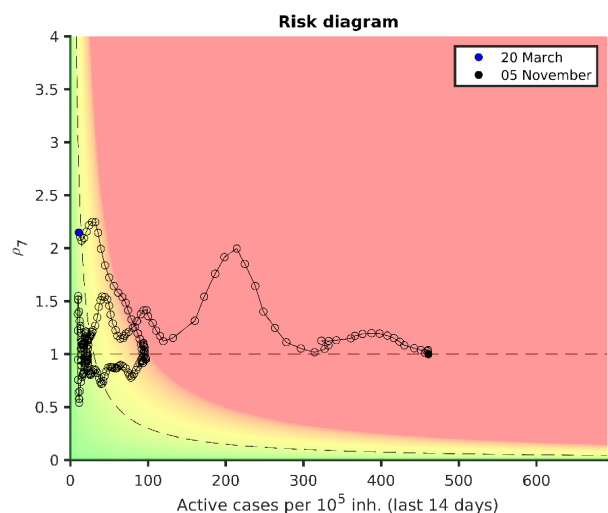
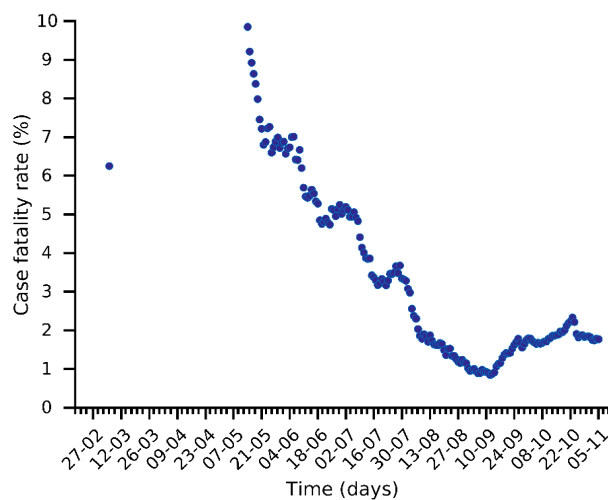
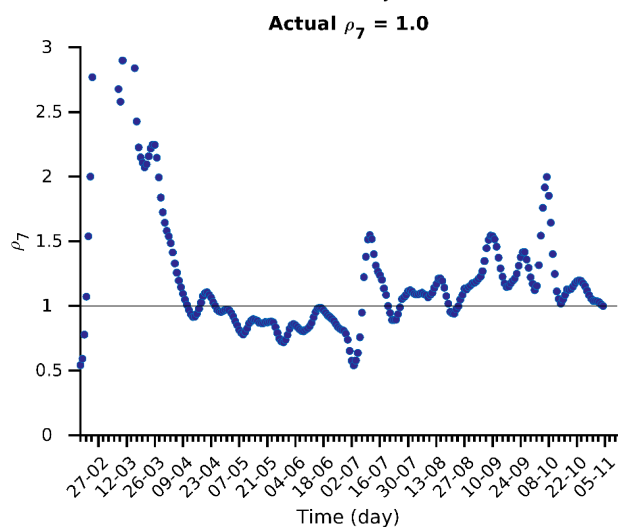
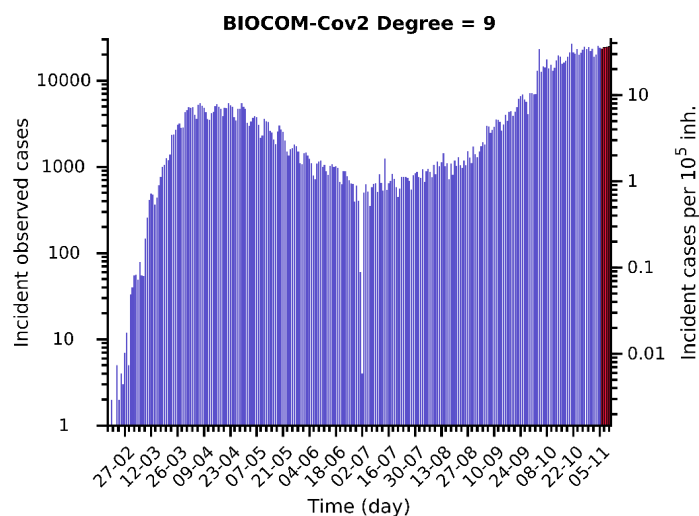
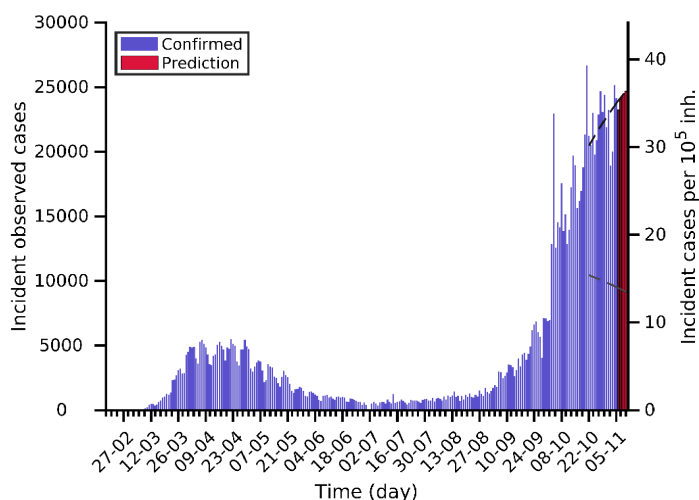


Predictions for next days

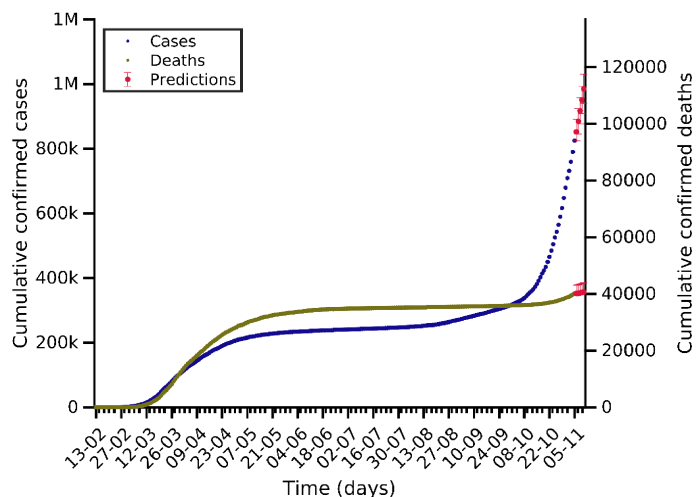
Day	Number of cases	95% Confidence Interval
06-11-2020	1146442 (+23245)	[1129667 - 1163217]
08-11-2020	1194907 (+24328)	[1177385 - 1212429]
10-11-2020	1244116 (+24695)	[1224923 - 1263310]

Current indicators

A ₁₄	EPG	CFR
461	460	1.77 %



Italy 05-11-2020. Pop: 60.5M. Cumulative incidence: 1364/10⁵

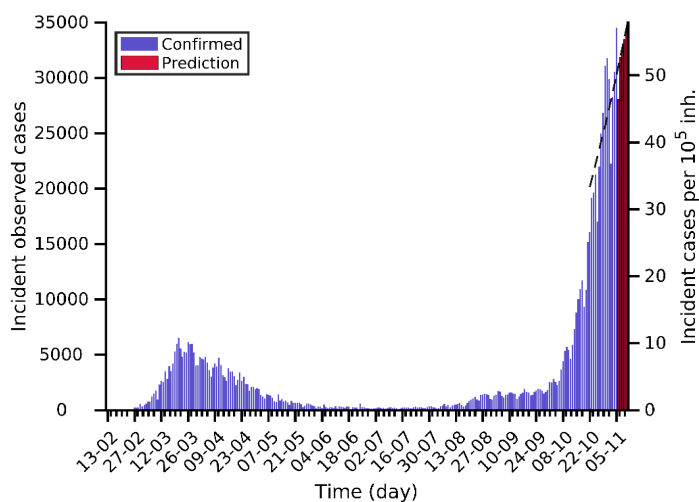


Predictions for next days

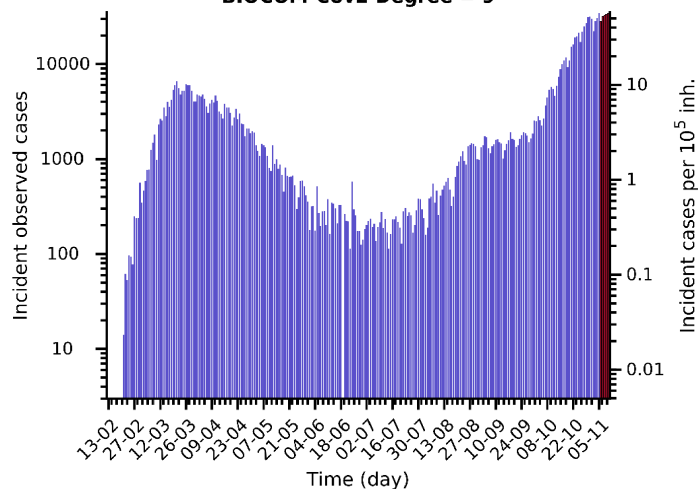
Day	Number of cases	95% Confidence Interval
06-11-2020	852913 (+28034)	[824879 - 891527]
08-11-2020	917441 (+32663)	[876769 - 958113]
10-11-2020	985186 (+34277)	[939582 - 1030789]

Current indicators

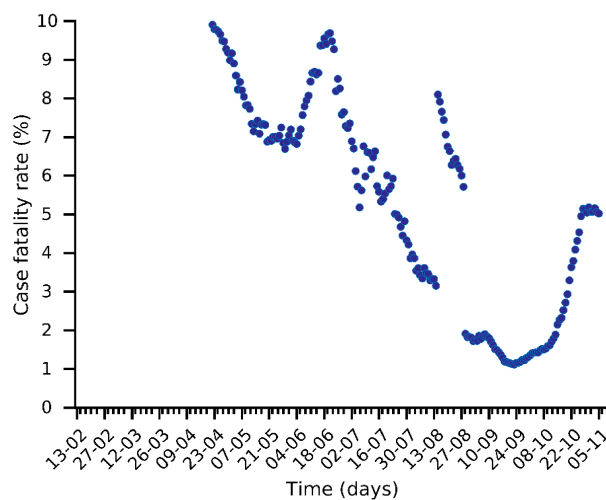
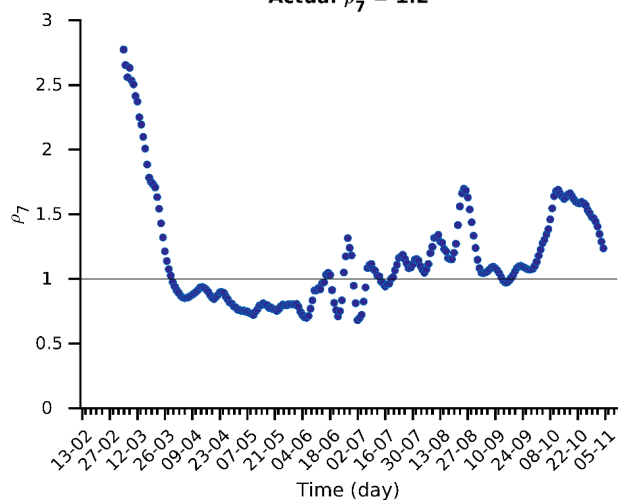
A ₁₄	EPG	CFR
594	734	5.02 %



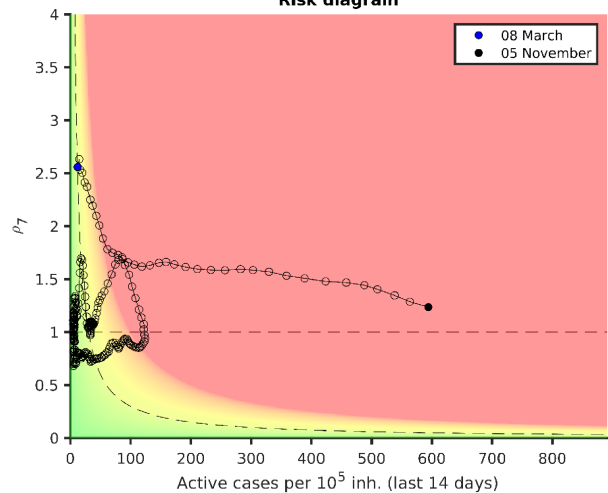
BIOCOM-Cov2 Degree = 9



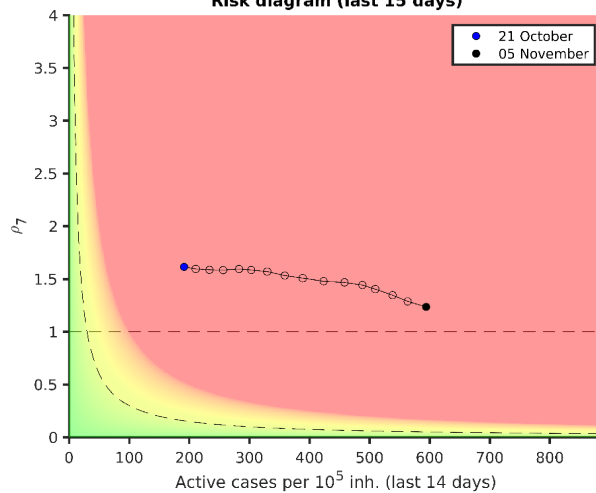
Actual $\rho_7 = 1.2$



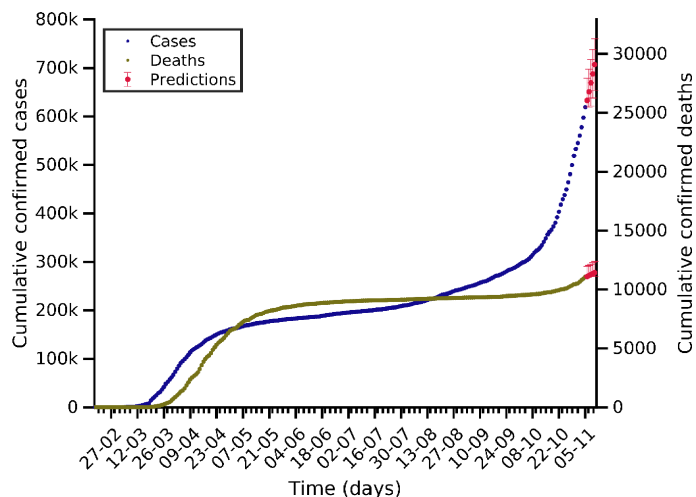
Risk diagram



Risk diagram (last 15 days)



Germany 05-11-2020. Pop: 83.8M. Cumulative incidence: 739/10⁵

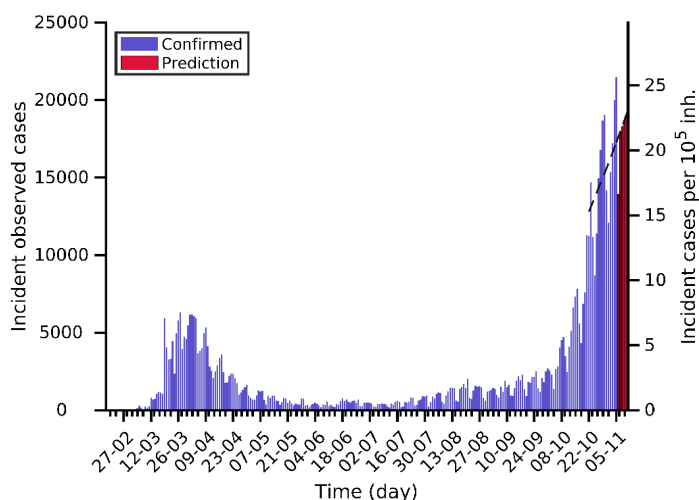


Predictions for next days

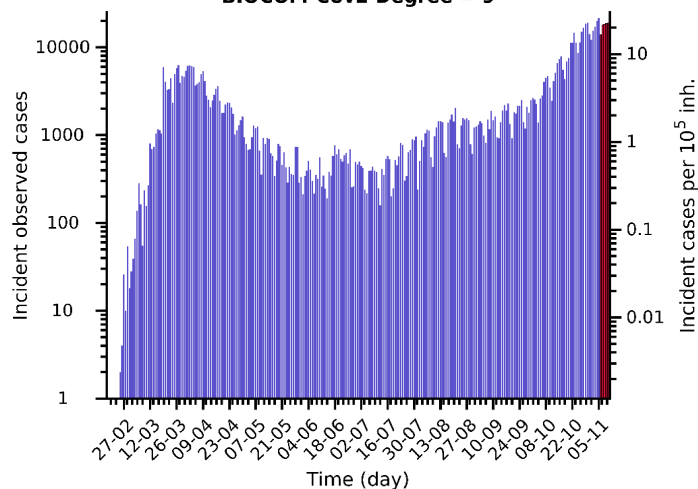
Day	Number of cases	95% Confidence Interval
06-11-2020	633031 (+13942)	[619089 - 678787]
08-11-2020	669260 (+18285)	[621244 - 717276]
10-11-2020	706861 (+18973)	[653571 - 760151]

Current indicators

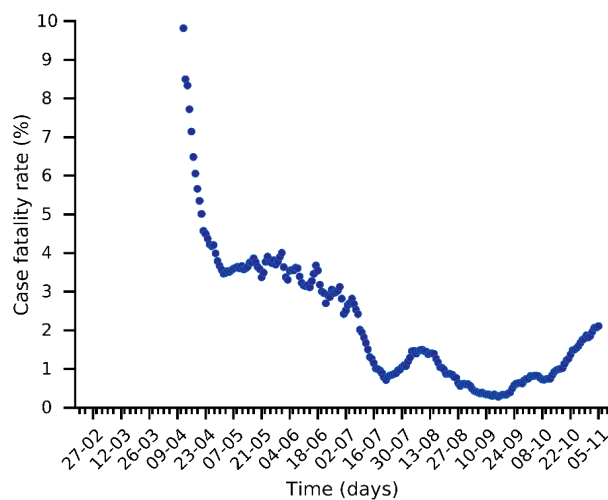
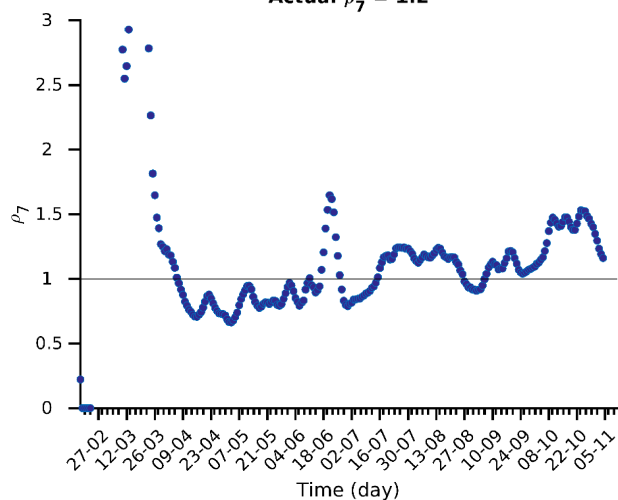
A ₁₄	EPG	CFR
258	299	2.11 %



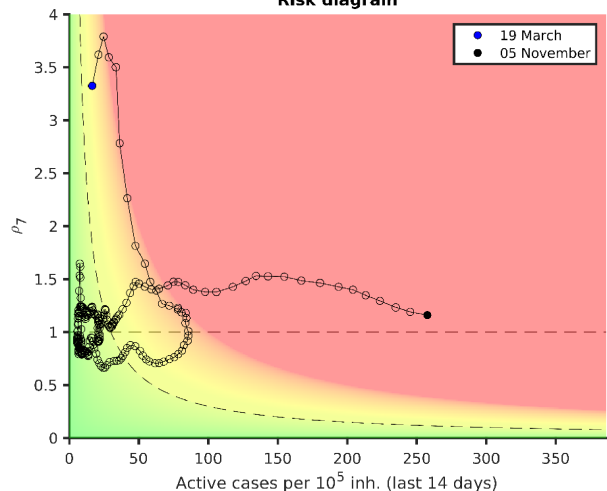
BIOCOM-Cov2 Degree = 9



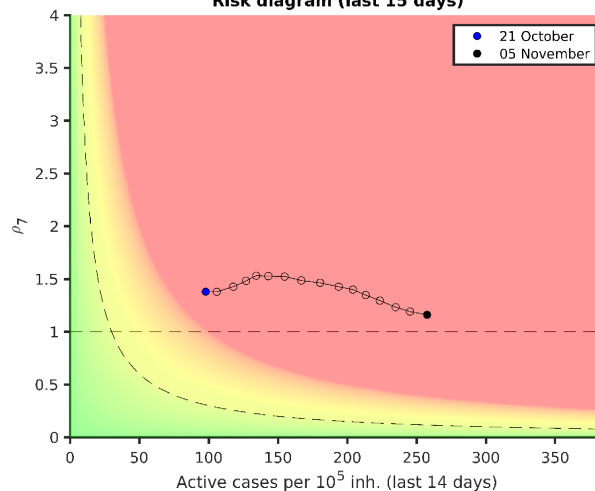
Actual $\rho_7 = 1.2$



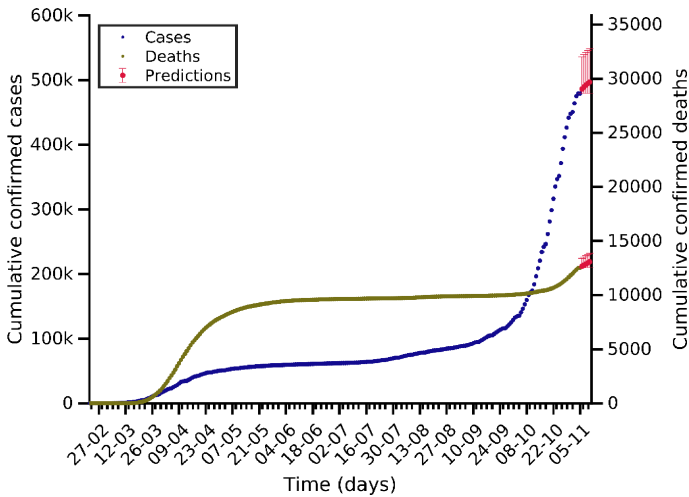
Risk diagram



Risk diagram (last 15 days)

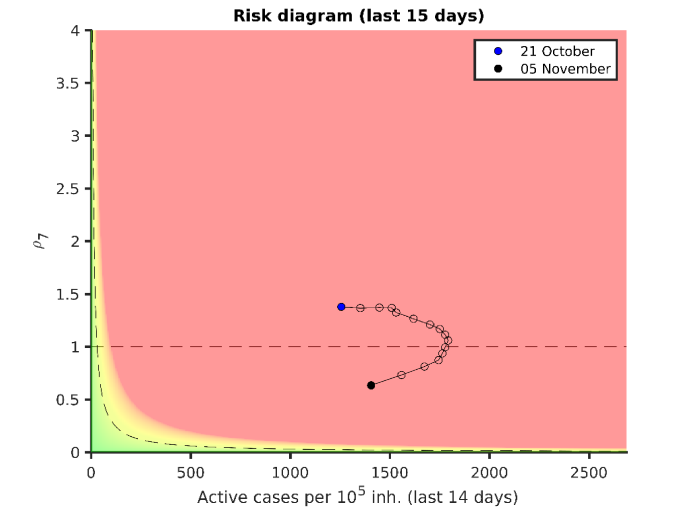
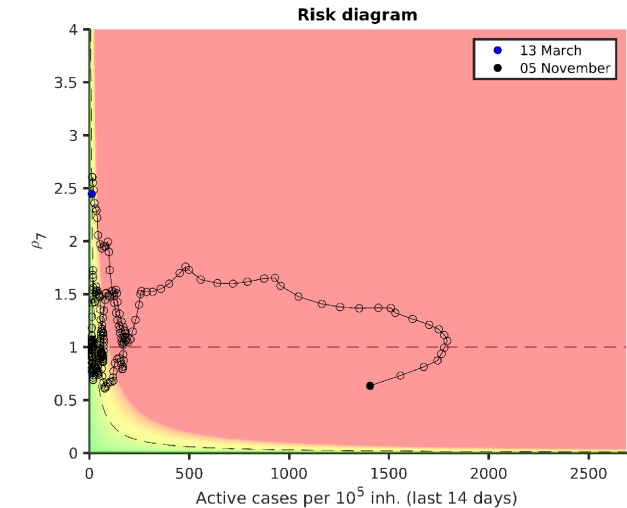
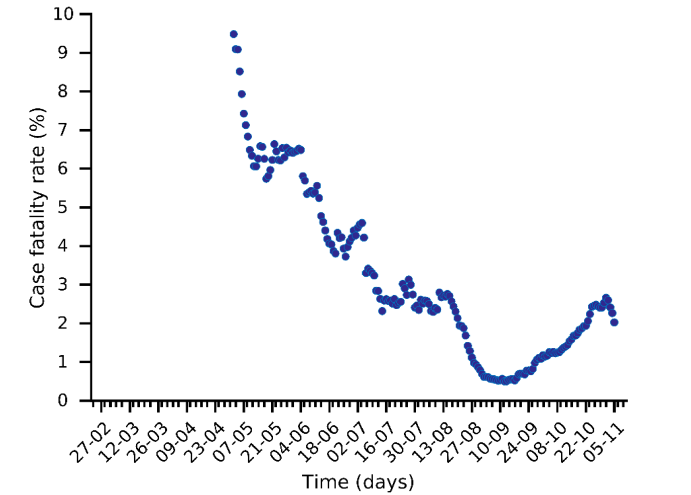
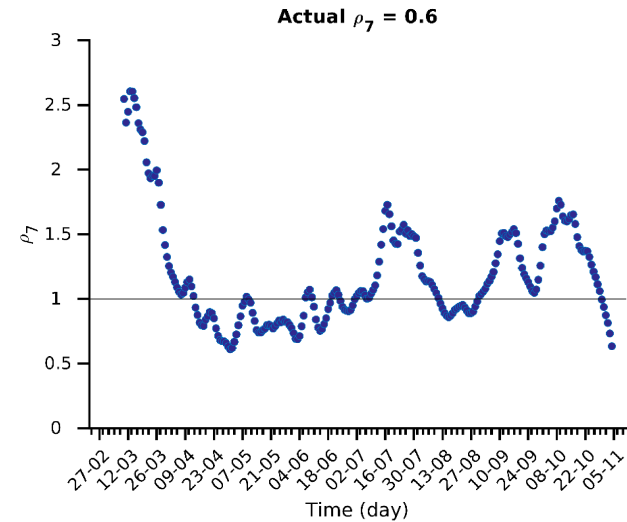
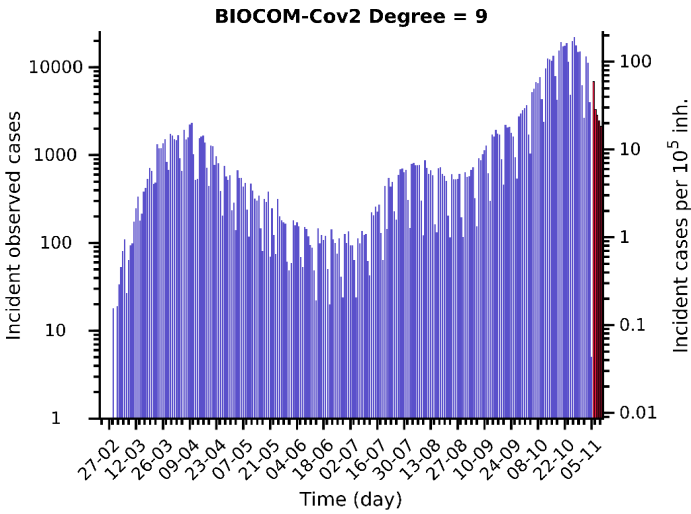
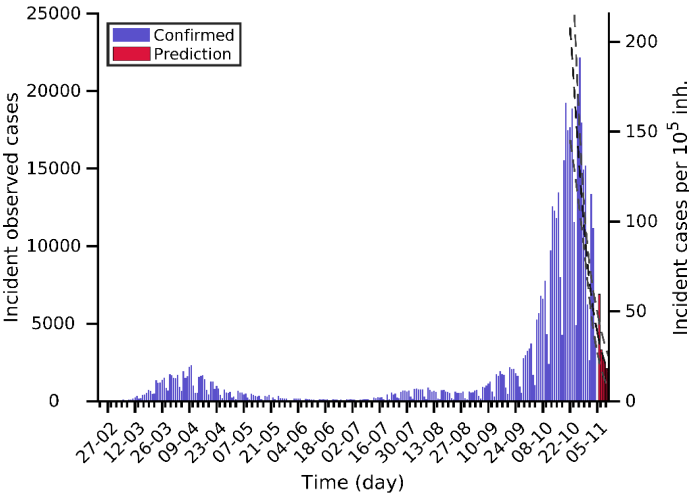


Belgium 05-11-2020. Pop: 11.6M. Cumulative incidence: 4135/10⁵

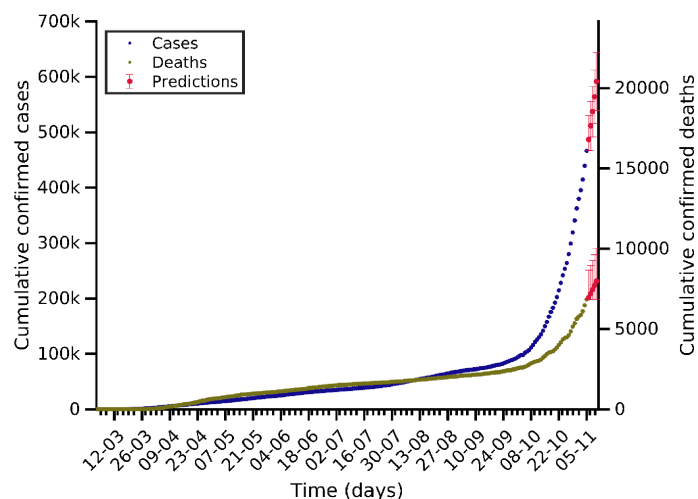


Predictions for next days		
Day	Number of cases	95% Confidence Interval
06-11-2020	486141 (+6895)	[479246 - 536051]
08-11-2020	492307 (+2856)	[479246 - 542828]
10-11-2020	496892 (+2122)	[479246 - 548243]

Current indicators		
A ₁₄	EPG	CFR
1405	891	2.02 %



Poland 05-11-2020. Pop: 37.8M. Cumulative incidence: 1233/10⁵

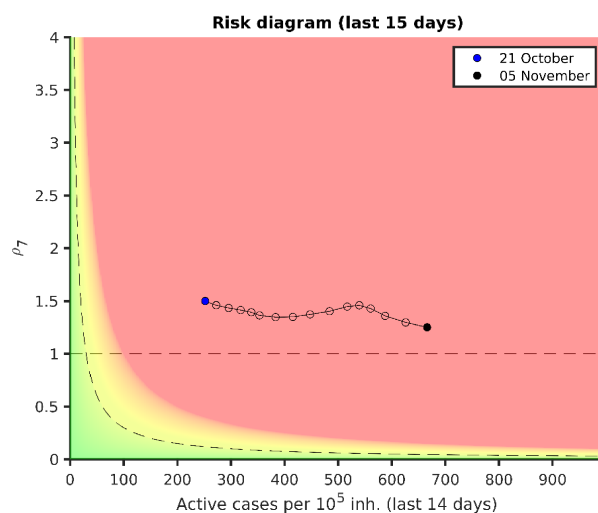
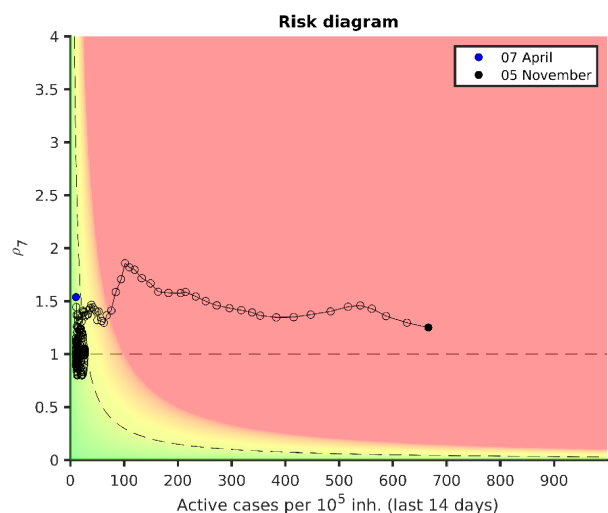
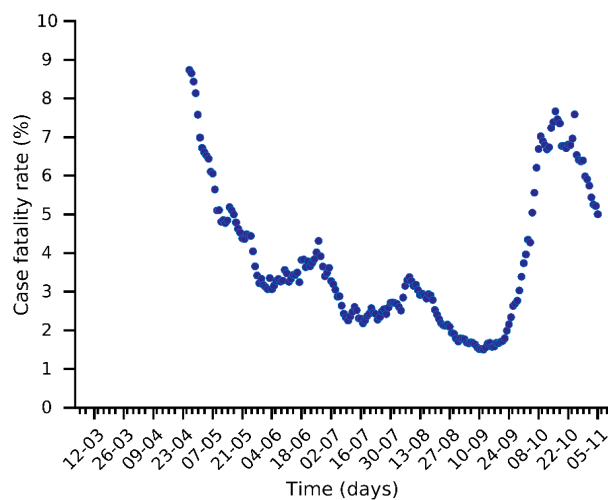
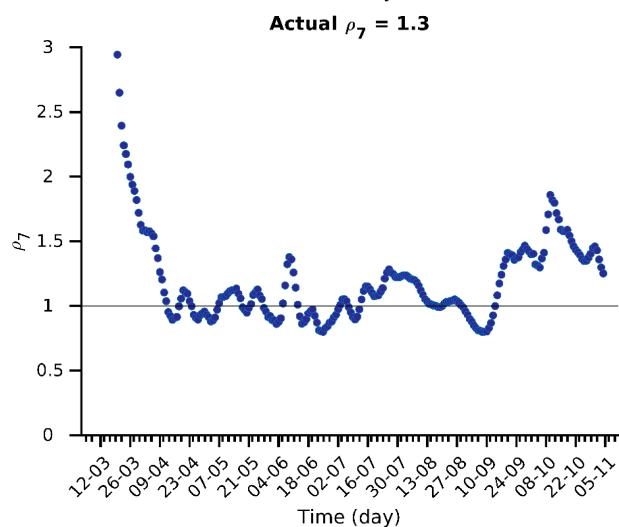
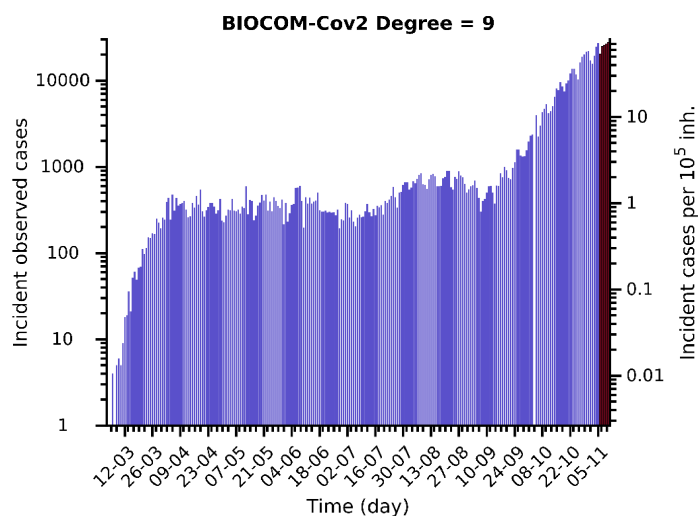
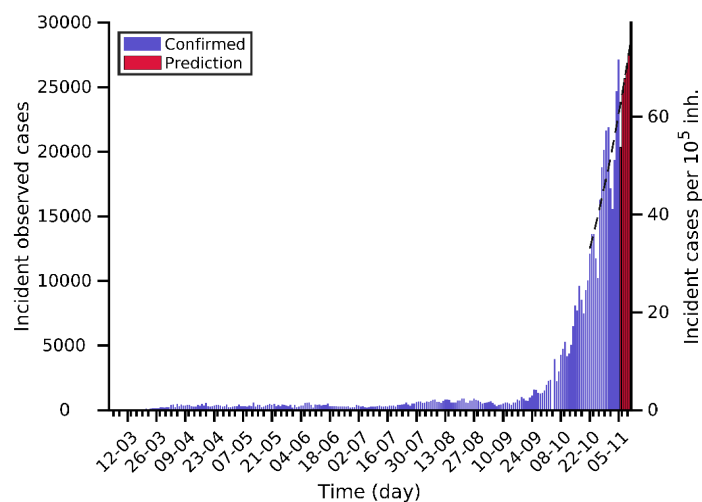


Predictions for next days

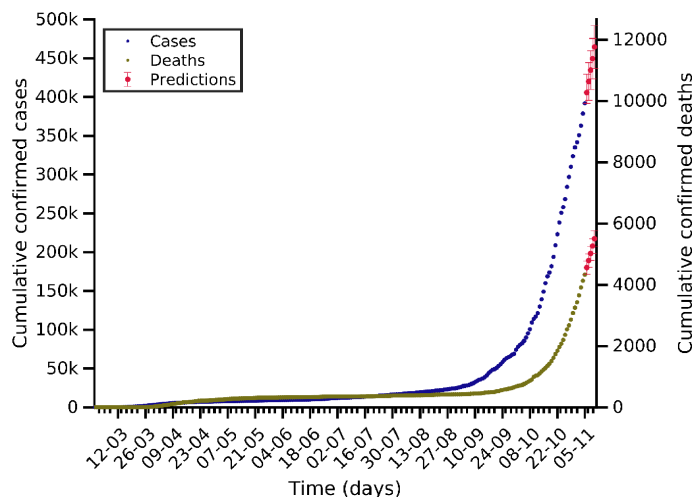
Day	Number of cases	95% Confidence Interval
06-11-2020	487018 (+20339)	[466679 - 530100]
08-11-2020	537428 (+25674)	[491727 - 583128]
10-11-2020	591672 (+27611)	[539381 - 643963]

Current indicators

A ₁₄	EPG	CFR
666	833	5.00 %



Czech Rep 05-11-2020. Pop: 10.7M. Cumulative incidence: 3660/10⁵

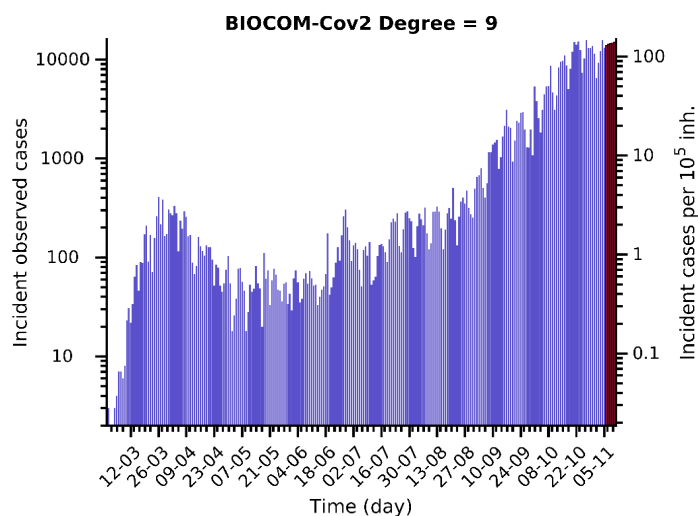
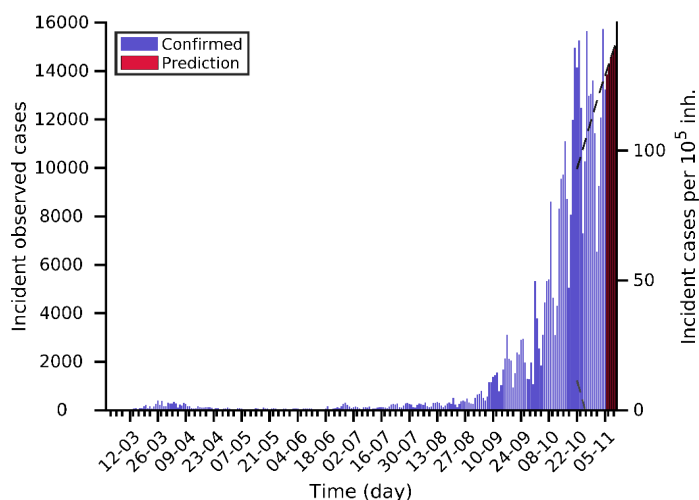


Predictions for next days

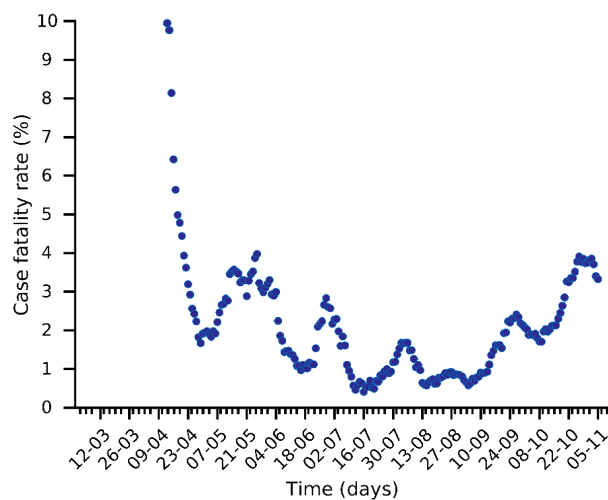
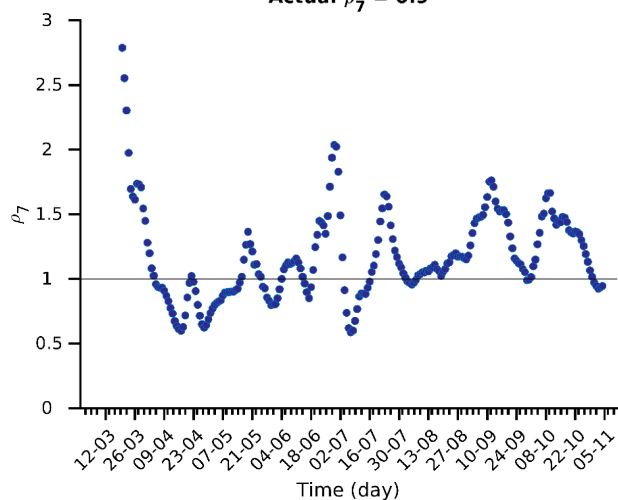
Day	Number of cases	95% Confidence Interval
06-11-2020	405796 (+13851)	[391945 - 429507]
08-11-2020	434660 (+14555)	[409754 - 459566]
10-11-2020	464492 (+15035)	[436795 - 492189]

Current indicators

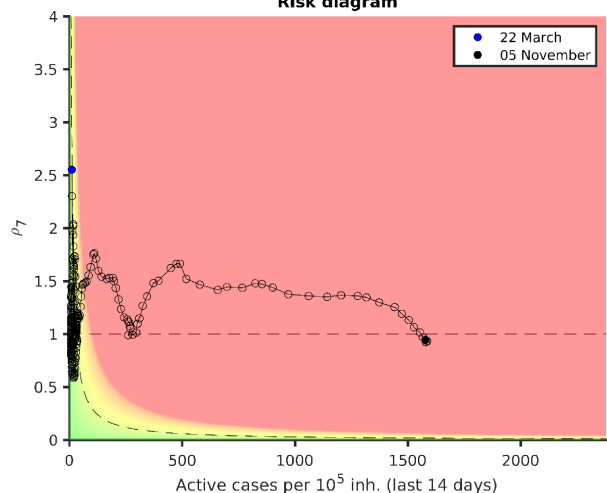
A ₁₄	EPG	CFR
1577	1490	3.32 %



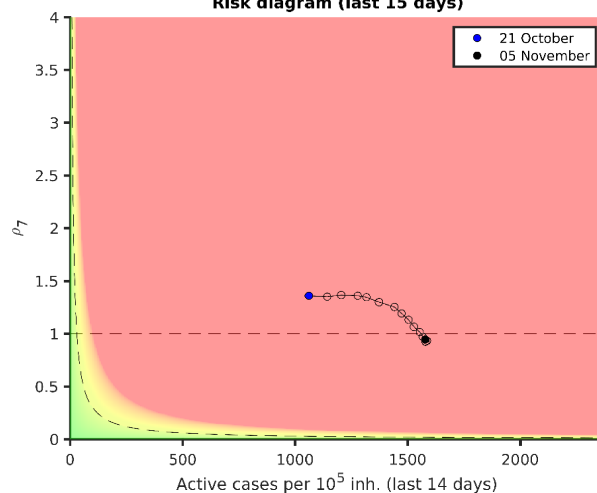
Actual $\rho_7 = 0.9$



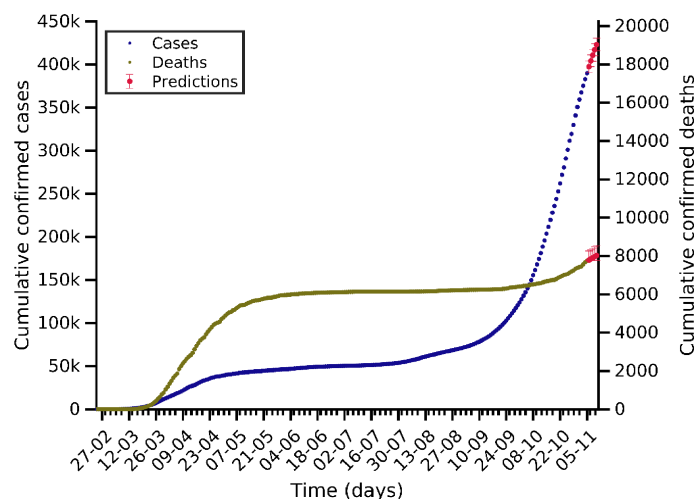
Risk diagram



Risk diagram (last 15 days)



Netherlands 05-11-2020. Pop: 17.1M. Cumulative incidence: 2276/10⁵

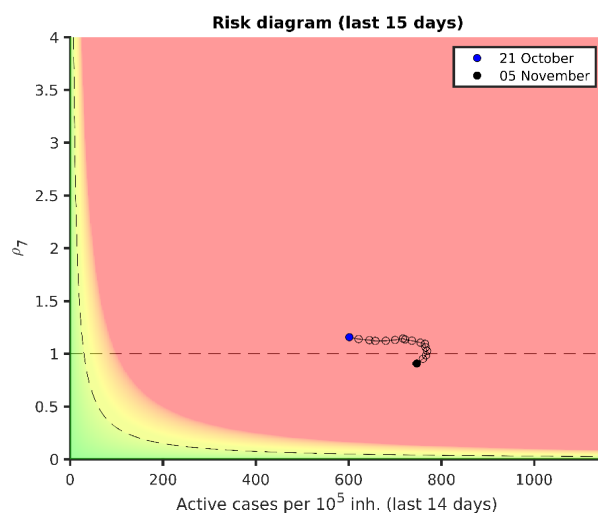
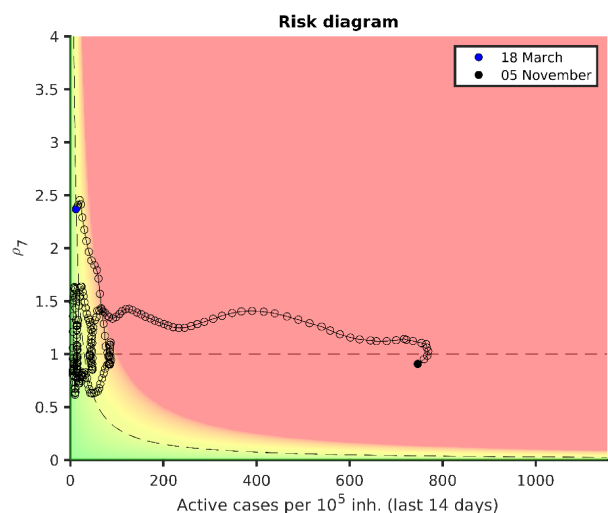
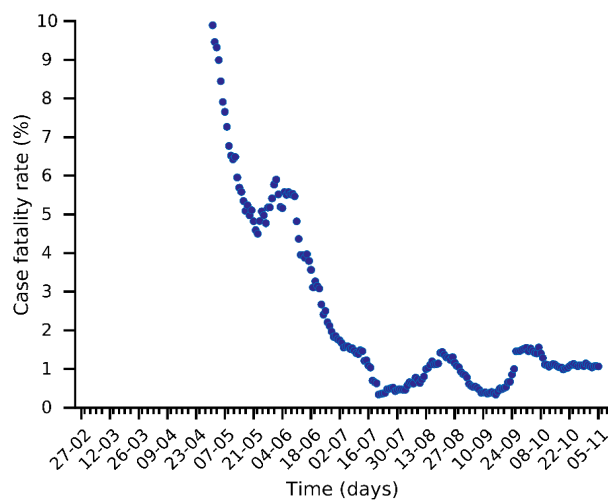
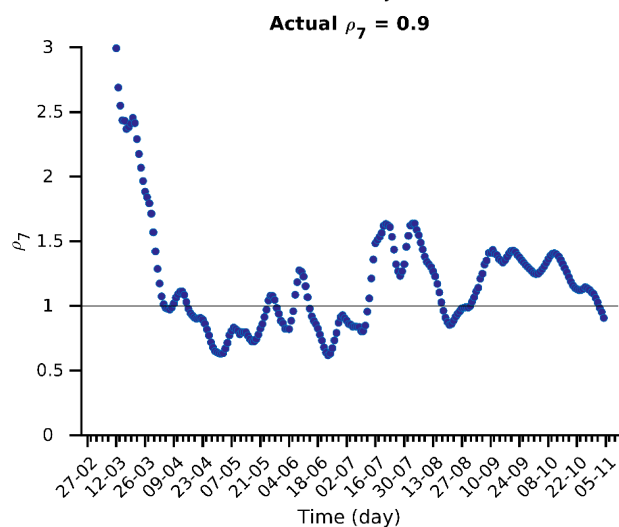
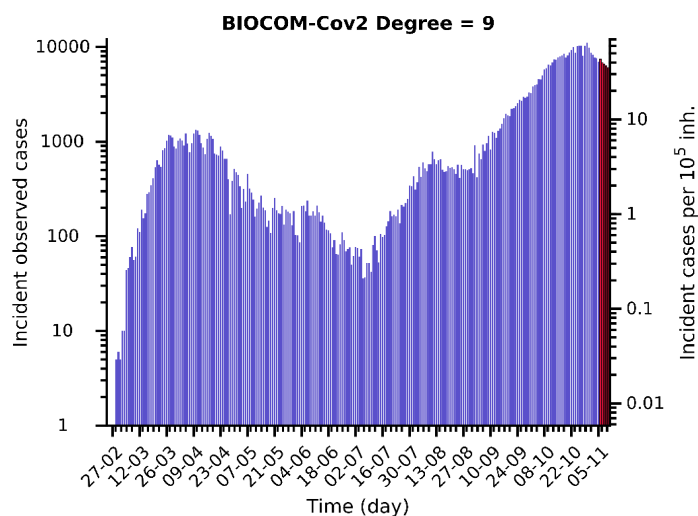
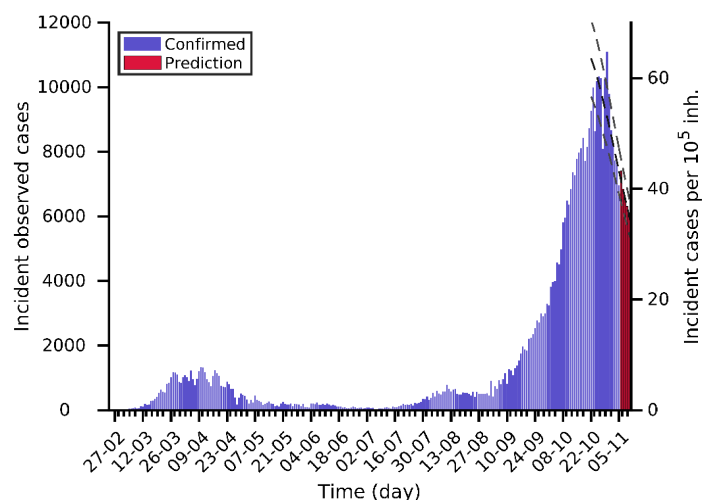


Predictions for next days

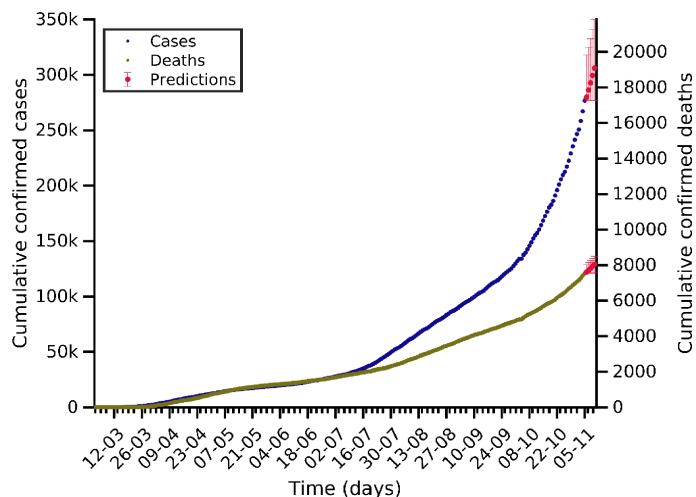
Day	Number of cases	95% Confidence Interval
06-11-2020	397429 (+7406)	[390717 - 404140]
08-11-2020	410852 (+6576)	[403930 - 417774]
10-11-2020	423214 (+6051)	[415888 - 430540]

Current indicators

A ₁₄	EPG	CFR
747	677	1.07 %



Romania 05-11-2020. Pop: 19.2M. Cumulative incidence: 1439/10⁵

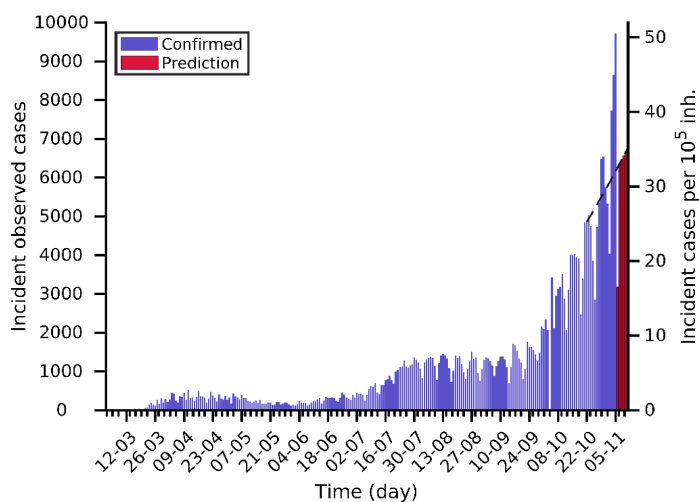


Predictions for next days

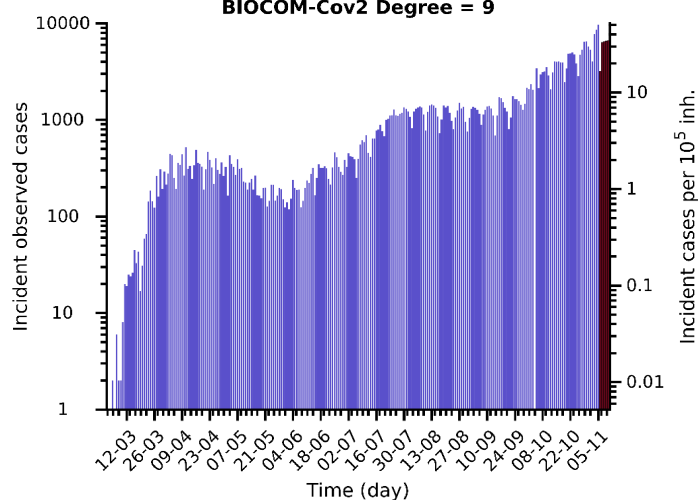
Day	Number of cases	95% Confidence Interval
06-11-2020	279985 (+3183)	[276802 - 317898]
08-11-2020	292820 (+6467)	[276802 - 332523]
10-11-2020	306056 (+6668)	[276802 - 349867]

Current indicators

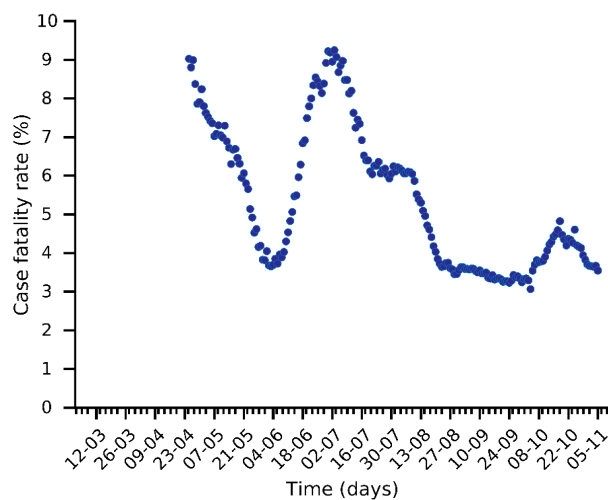
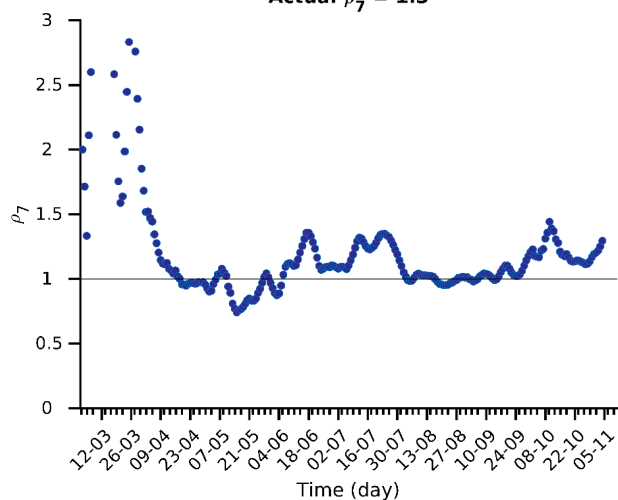
A ₁₄	EPG	CFR
420	544	3.55 %



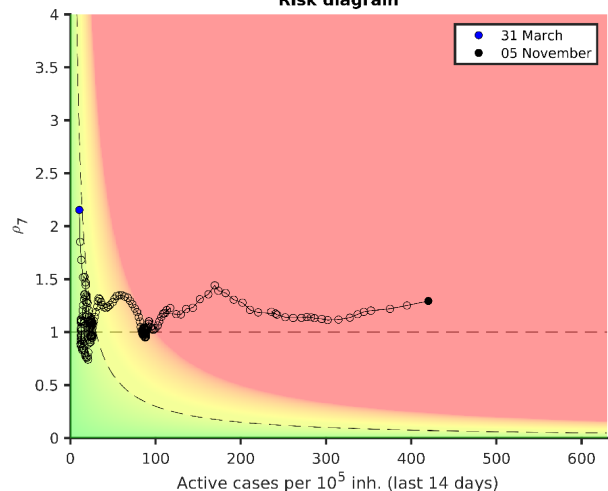
BIOCOM-Cov2 Degree = 9



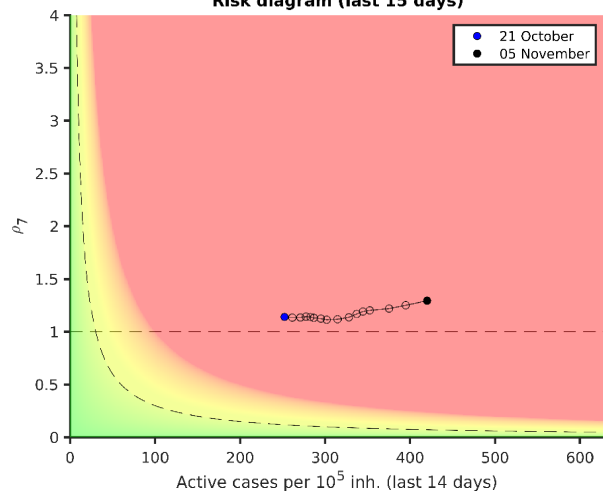
Actual $\rho_7 = 1.3$



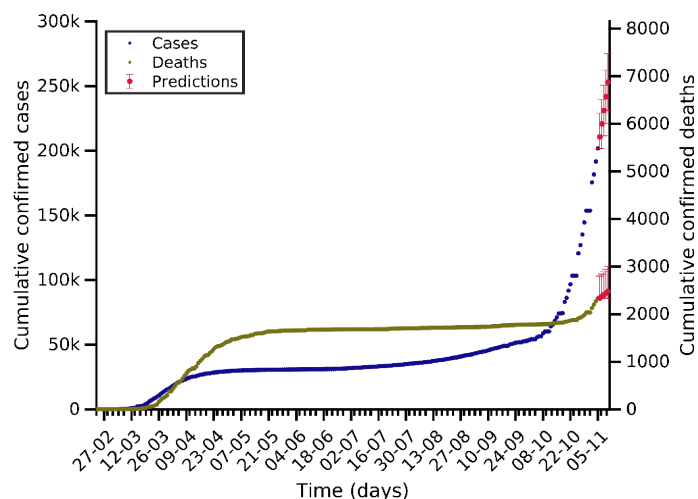
Risk diagram



Risk diagram (last 15 days)



Switzerland 05-11-2020. Pop: 8.7M. Cumulative incidence: 2332/10⁵

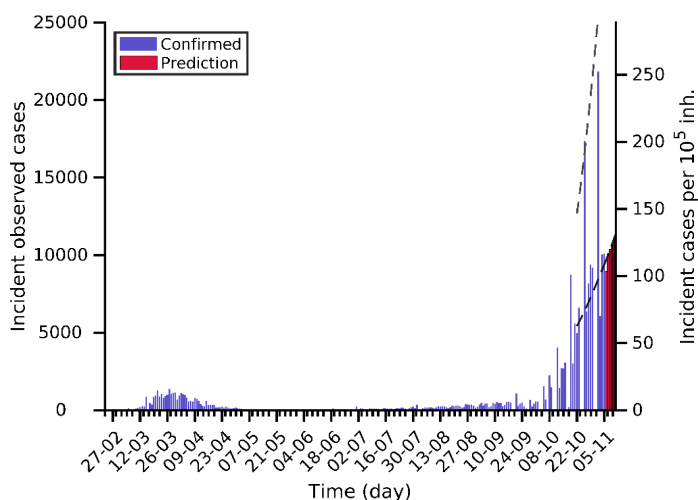


Predictions for next days

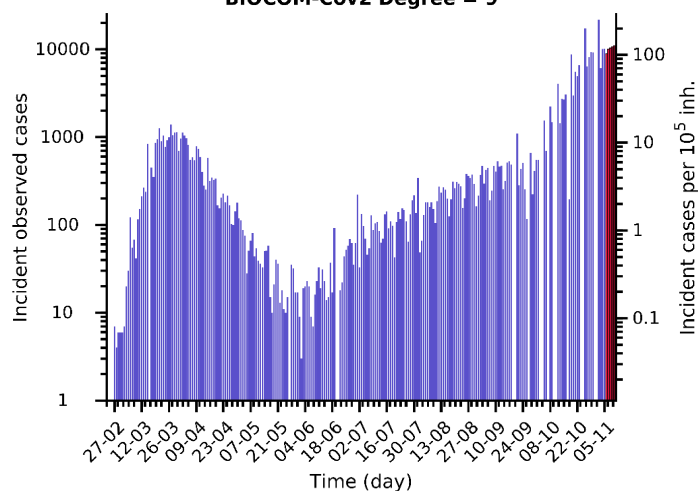
Day	Number of cases	95% Confidence Interval
06-11-2020	210753 (+8952)	[201801 - 229149]
08-11-2020	231178 (+10380)	[211706 - 250650]
10-11-2020	252964 (+11065)	[230826 - 275101]

Current indicators

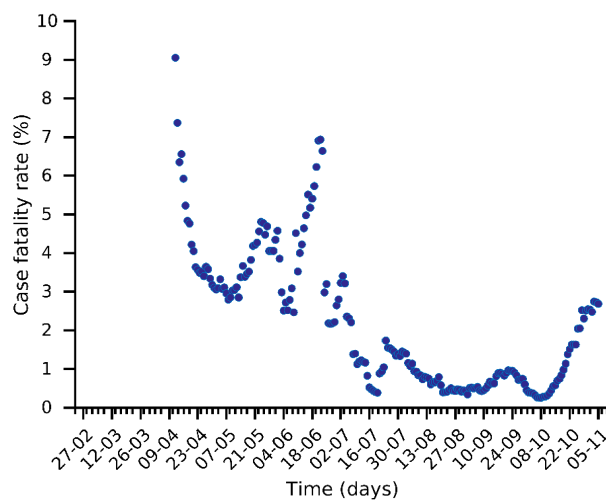
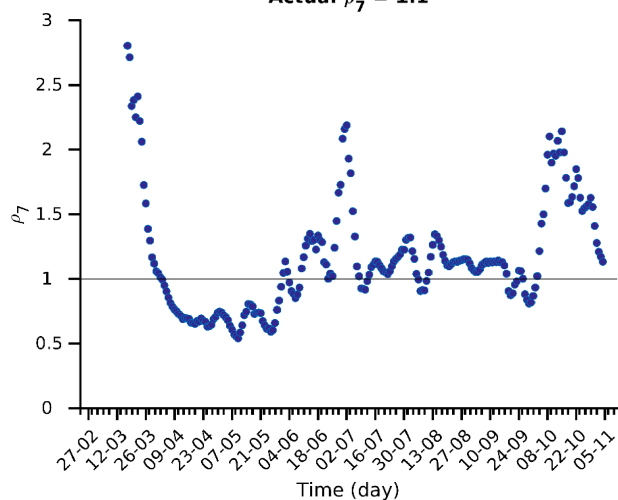
A ₁₄	EPG	CFR
1214	1375	2.69 %



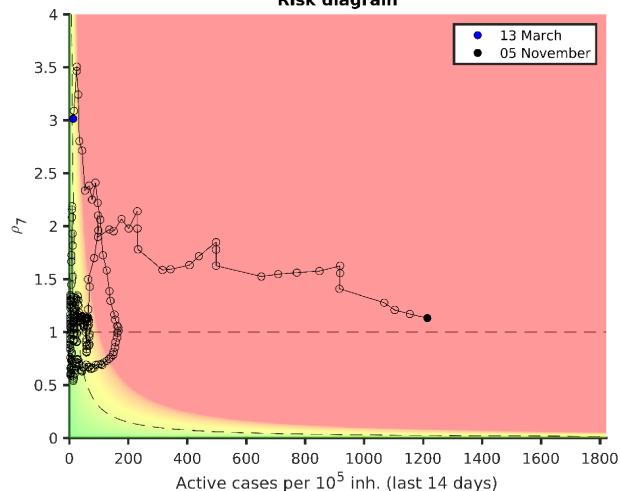
BIOCOM-Cov2 Degree = 9



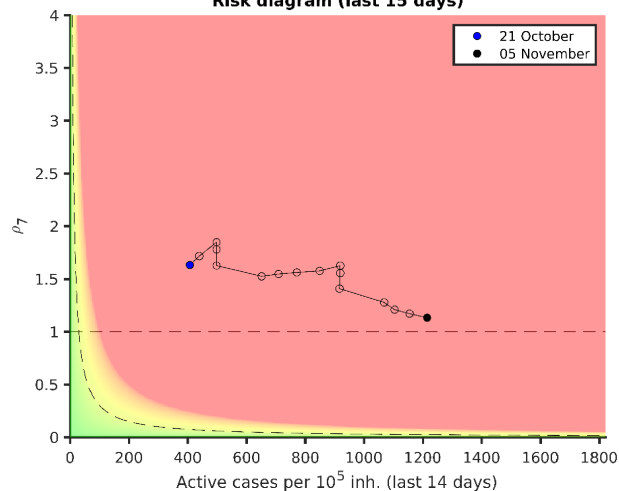
Actual $\rho_7 = 1.1$



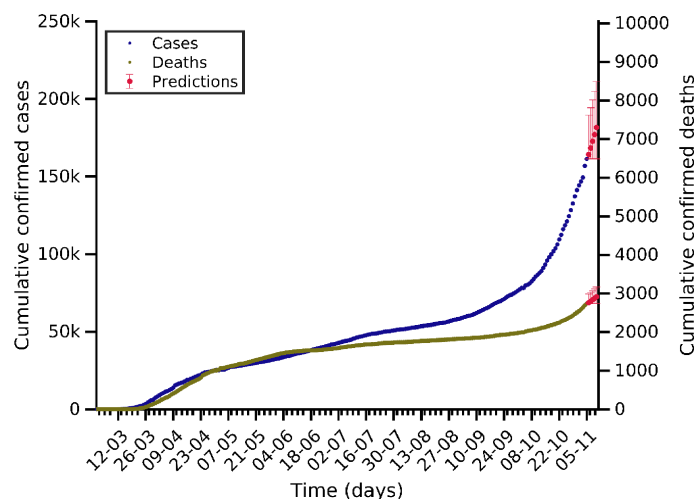
Risk diagram



Risk diagram (last 15 days)



Portugal 05-11-2020. Pop: 10.2M. Cumulative incidence: 1582/10⁵

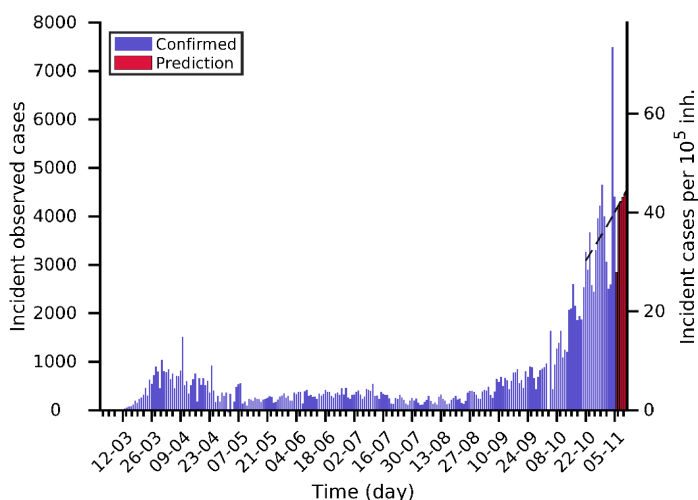


Predictions for next days

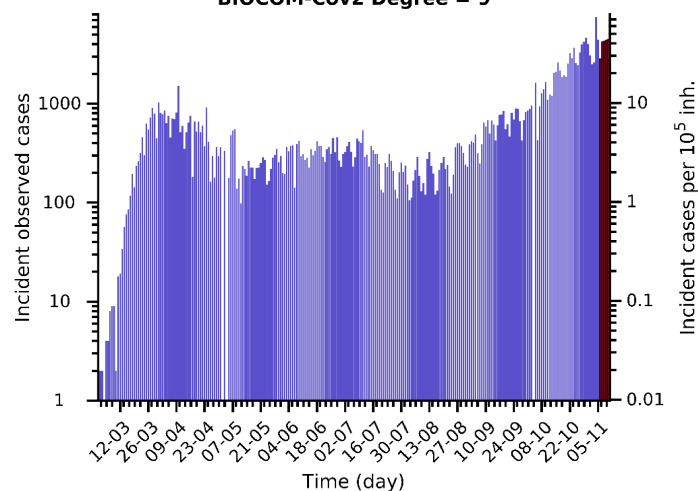
Day	Number of cases	95% Confidence Interval
06-11-2020	164201 (+2851)	[161350 - 189661]
08-11-2020	172752 (+4315)	[161350 - 199452]
10-11-2020	181618 (+4472)	[161350 - 211197]

Current indicators

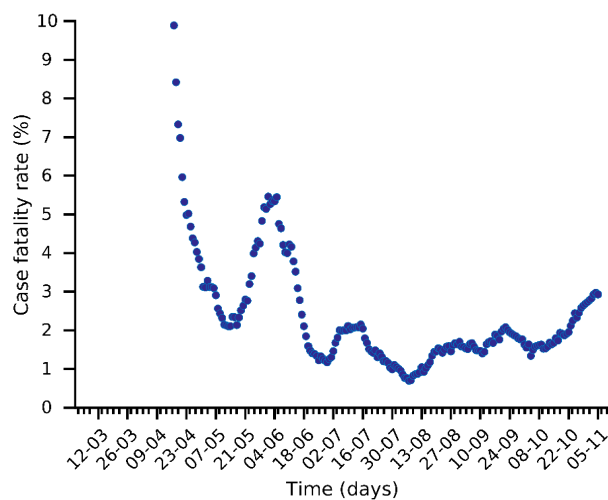
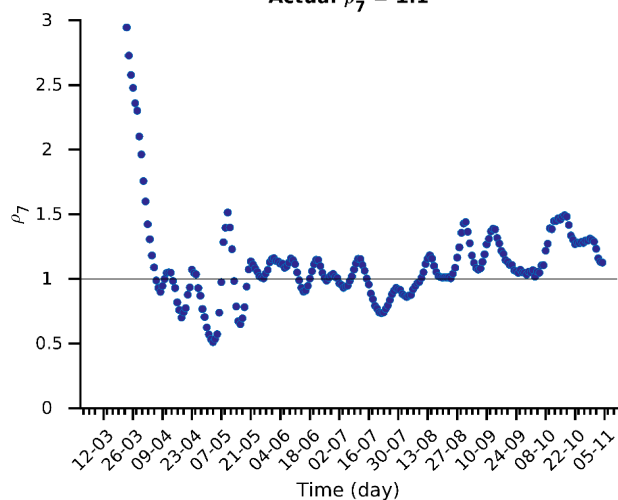
A ₁₄	EPG	CFR
508	572	2.93 %



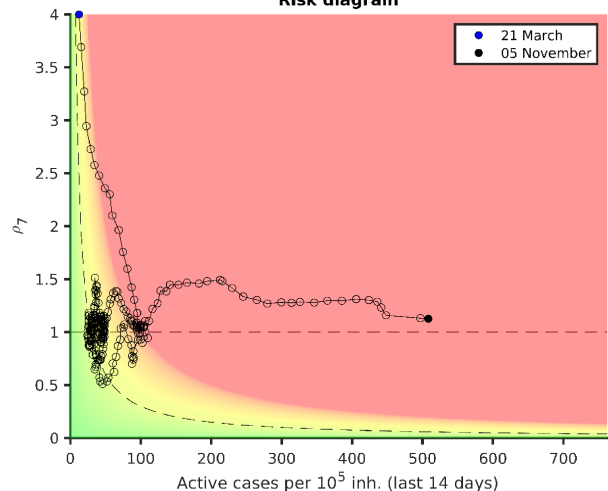
BIOCOM-Cov2 Degree = 9



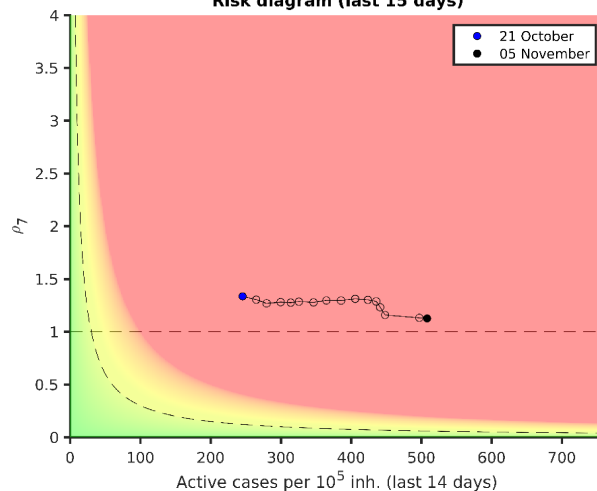
Actual $\rho_7 = 1.1$



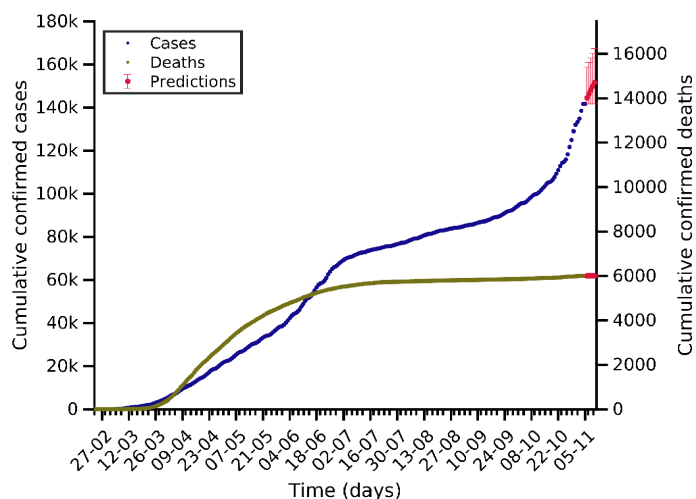
Risk diagram



Risk diagram (last 15 days)



Sweden 05-11-2020. Pop: 10.1M. Cumulative incidence: 1404/10⁵

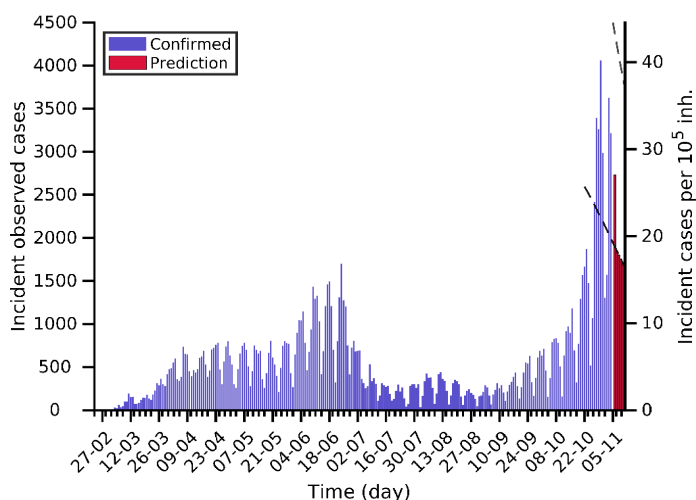


Predictions for next days

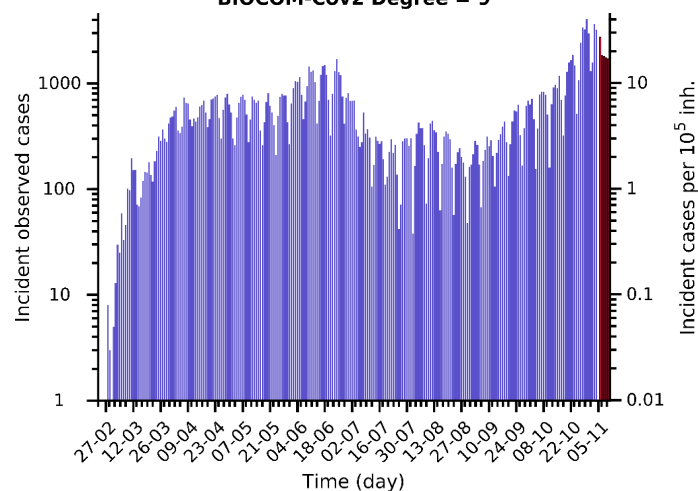
Day	Number of cases	95% Confidence Interval
06-11-2020	144496 (+2732)	[141764 - 158907]
08-11-2020	148146 (+1801)	[141764 - 163042]
10-11-2020	151605 (+1706)	[141764 - 167467]

Current indicators

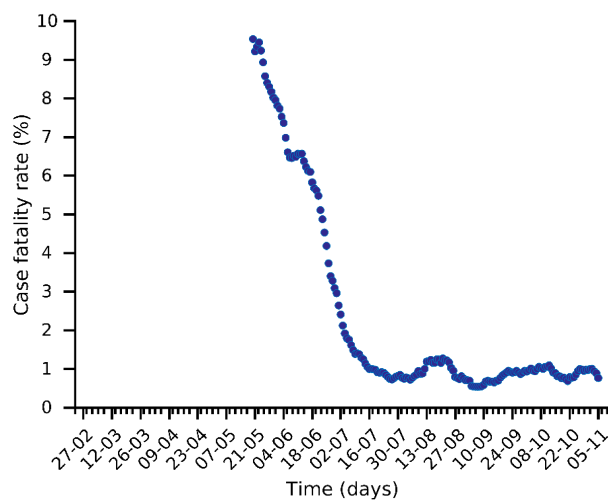
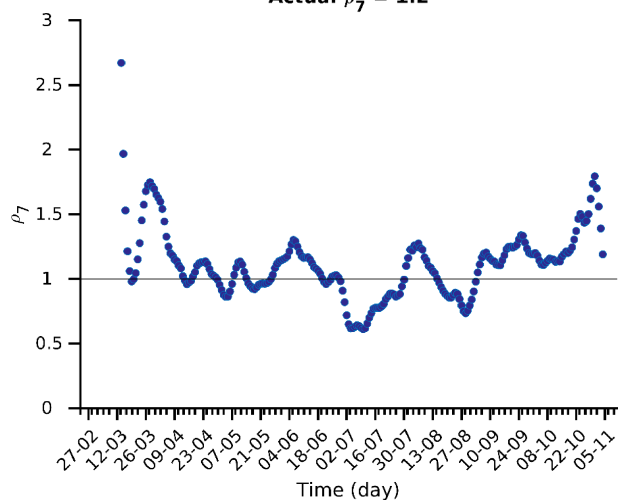
A ₁₄	EPG	CFR
305	363	0.76 %



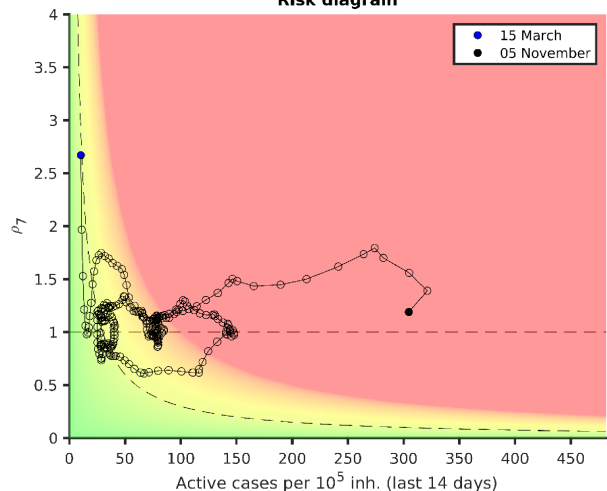
BIOCOM-Cov2 Degree = 9



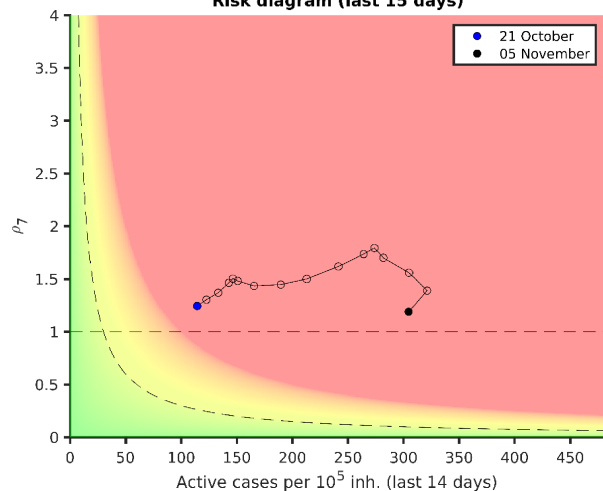
Actual $\rho_7 = 1.2$



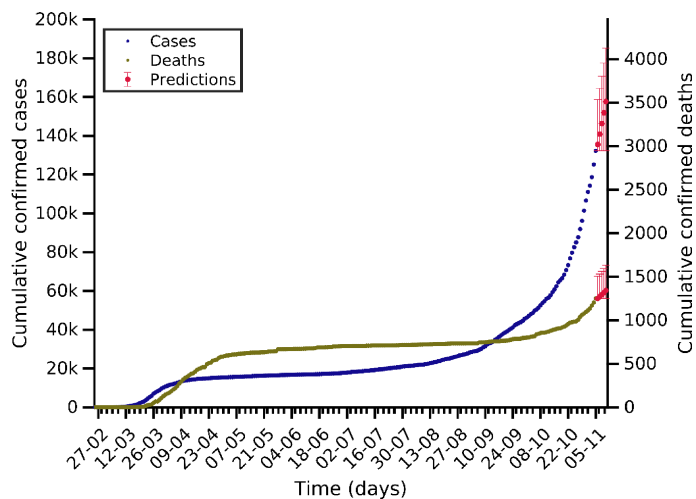
Risk diagram



Risk diagram (last 15 days)



Austria 05-11-2020. Pop: 9.0M. Cumulative incidence: 1469/10⁵

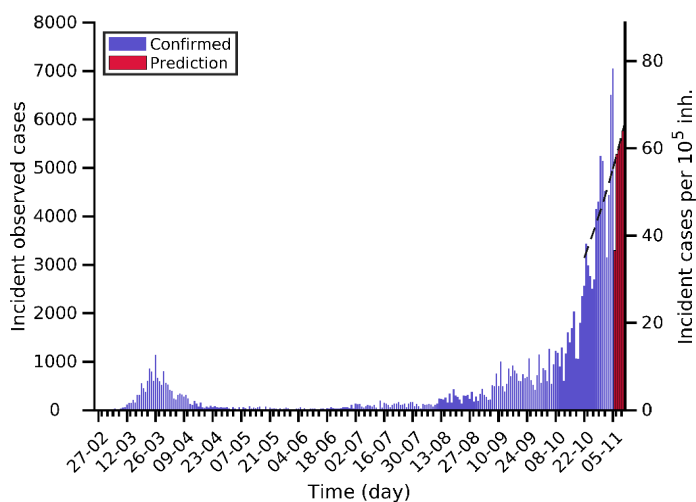


Predictions for next days

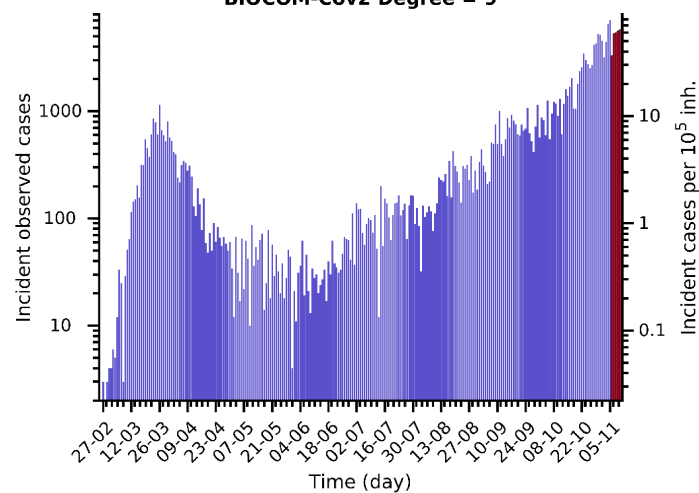
Day	Number of cases	95% Confidence Interval
06-11-2020	135572 (+3292)	[132280 - 158723]
08-11-2020	146296 (+5441)	[132280 - 170726]
10-11-2020	157664 (+5766)	[132280 - 185209]

Current indicators

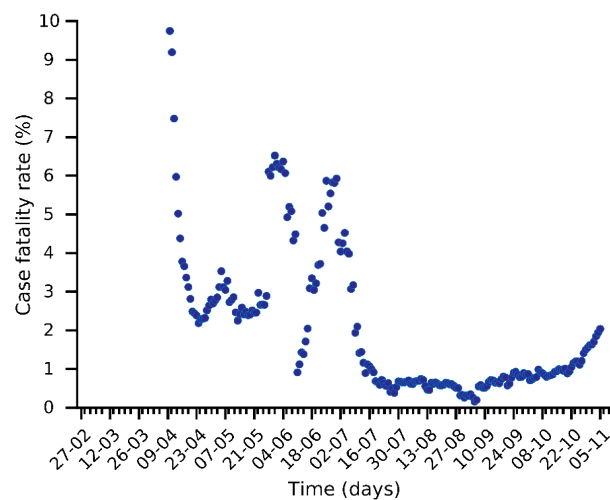
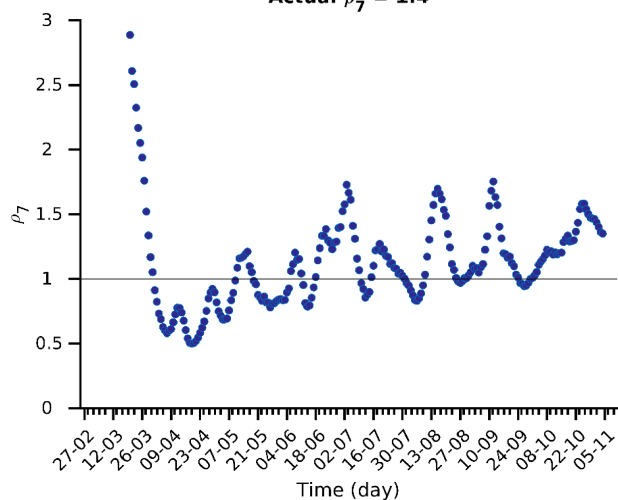
A ₁₄	EPG	CFR
654	884	2.04 %



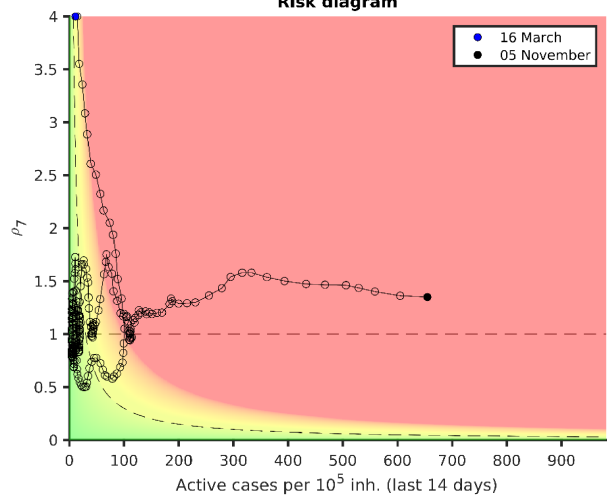
BIOCOM-Cov2 Degree = 9



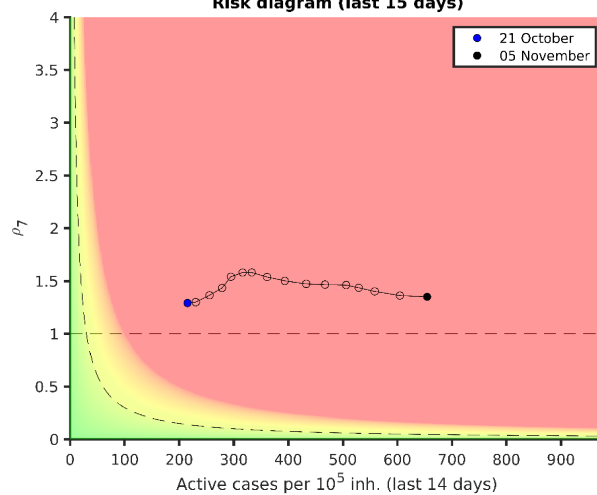
Actual $\rho_7 = 1.4$



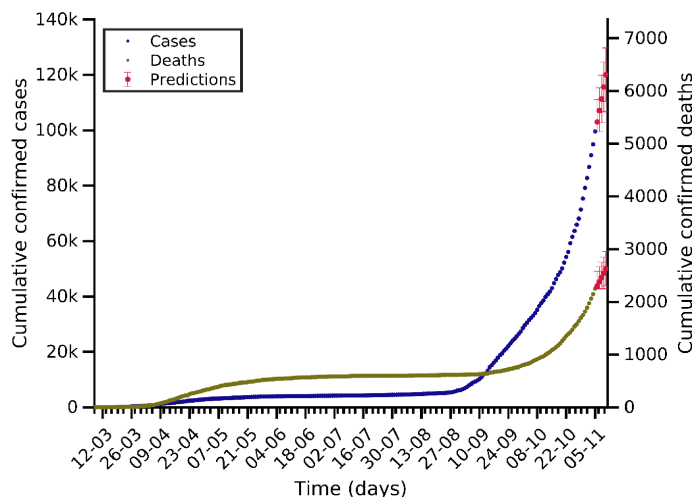
Risk diagram



Risk diagram (last 15 days)



Hungary 05-11-2020. Pop: 9.7M. Cumulative incidence: 1031/10⁵

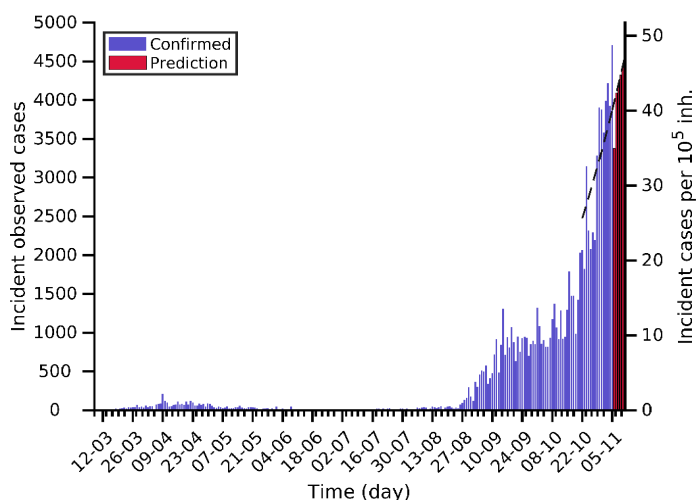


Predictions for next days

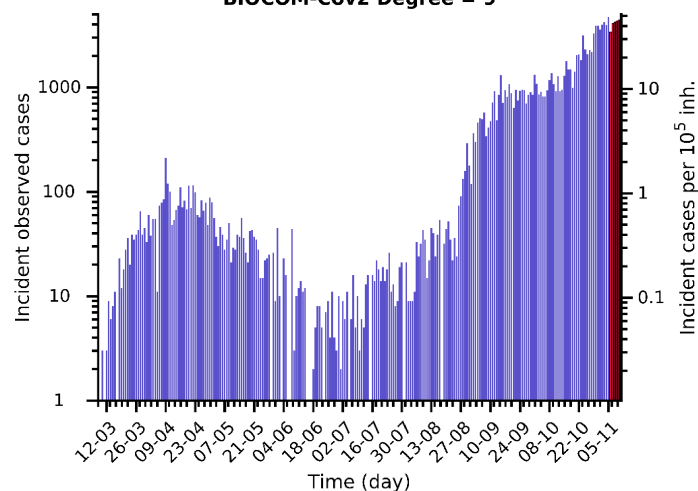
Day	Number of cases	95% Confidence Interval
06-11-2020	103001 (+3376)	[99625 - 111111]
08-11-2020	111304 (+4208)	[102750 - 119857]
10-11-2020	120067 (+4440)	[110438 - 129696]

Current indicators

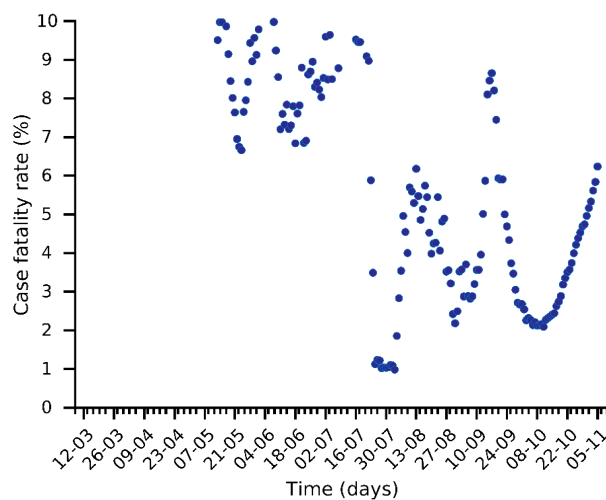
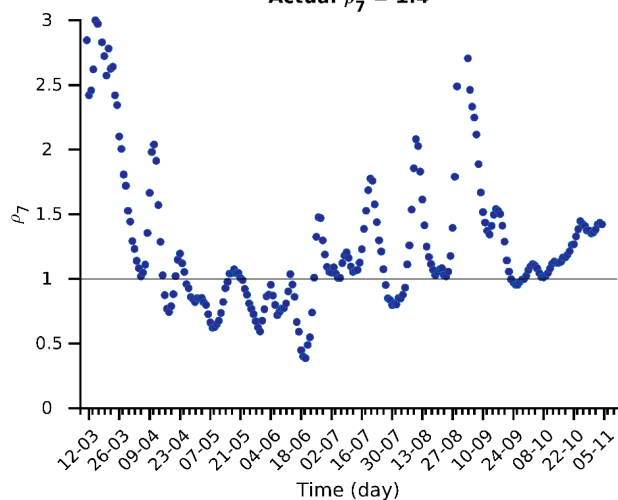
A ₁₄	EPG	CFR
469	667	6.24 %



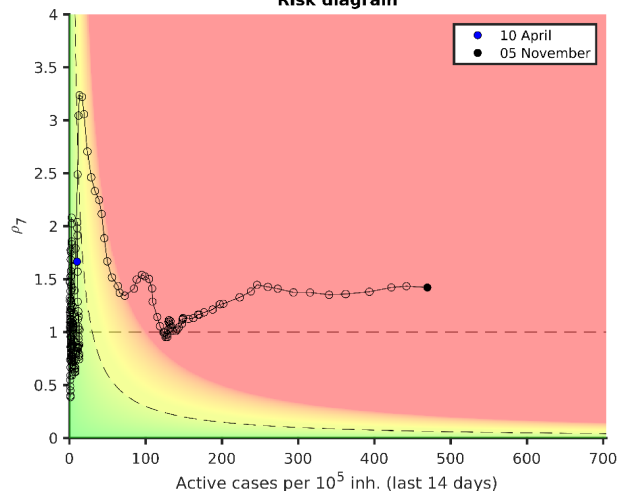
BIOCOM-Cov2 Degree = 9



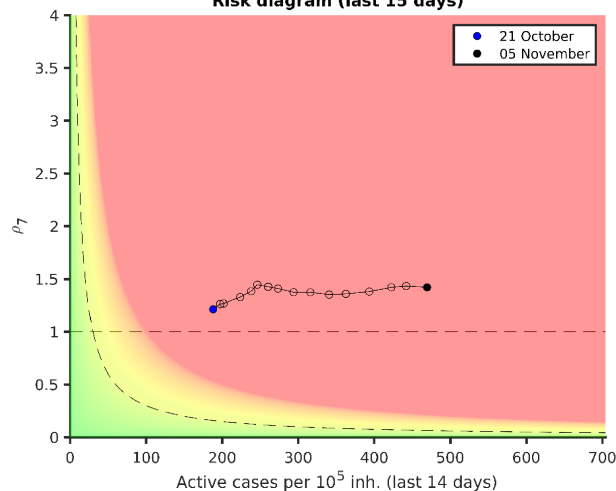
Actual $\rho_7 = 1.4$



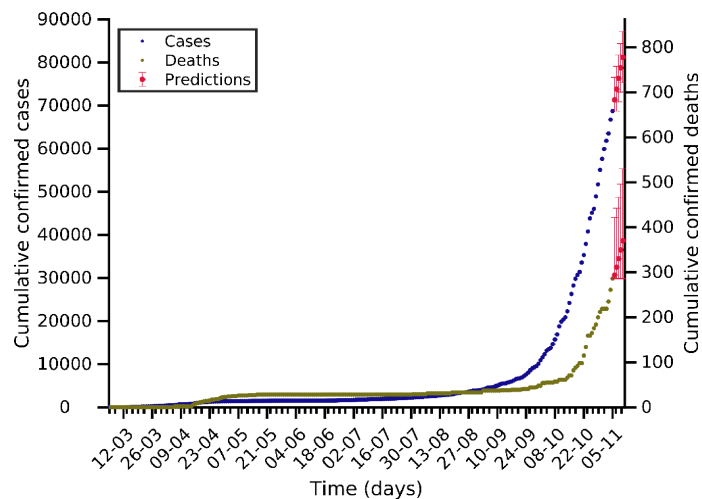
Risk diagram



Risk diagram (last 15 days)



Slovakia 05-11-2020. Pop: 5.5M. Cumulative incidence: 1259/10⁵

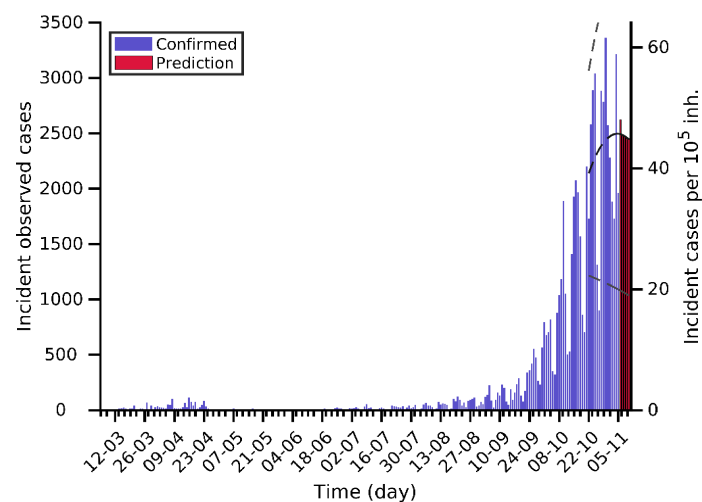


Predictions for next days

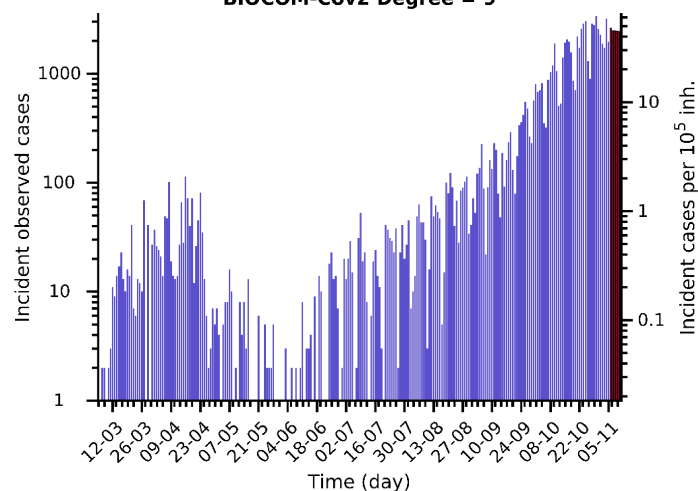
Day	Number of cases	95% Confidence Interval
06-11-2020	71357 (+2623)	[68734 - 76553]
08-11-2020	76318 (+2475)	[70893 - 81743]
10-11-2020	81227 (+2447)	[75299 - 87155]

Current indicators

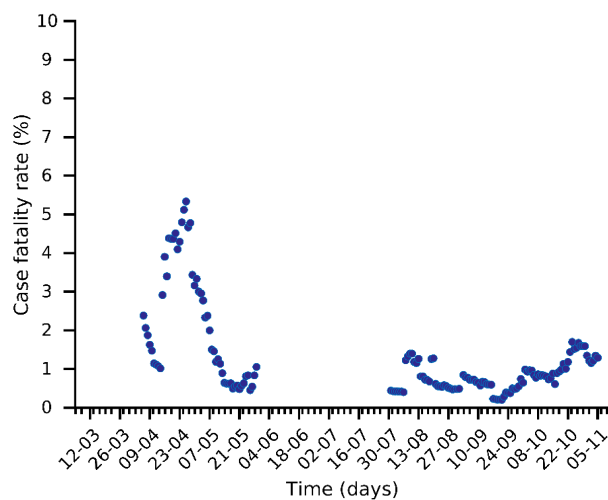
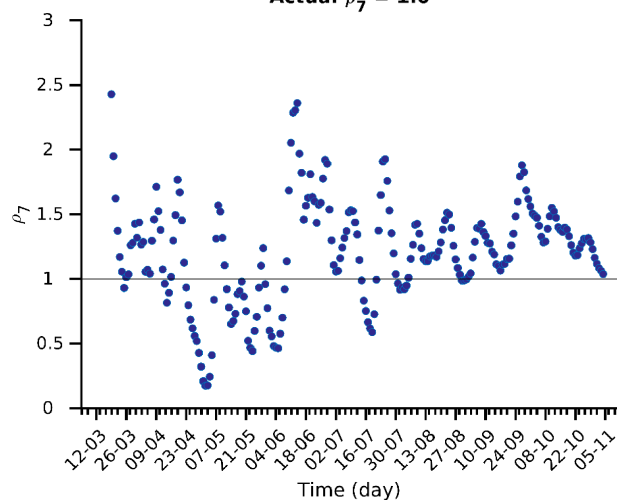
A ₁₄	EPG	CFR
612	635	1.29 %



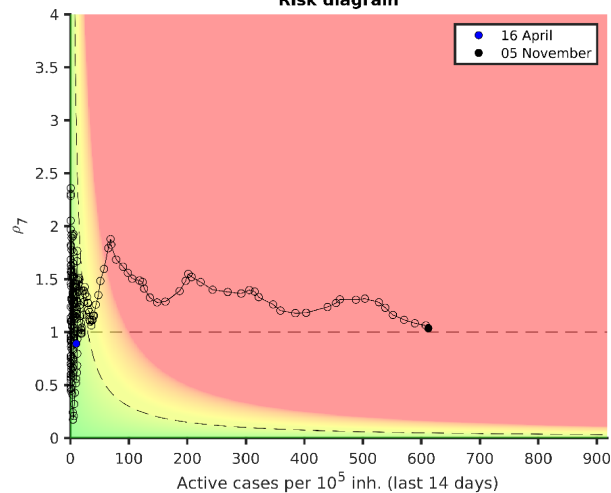
BIOCOM-Cov2 Degree = 9



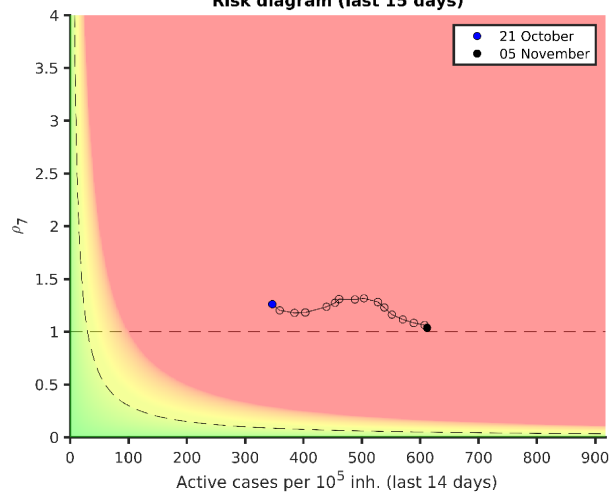
Actual $\rho_7 = 1.0$



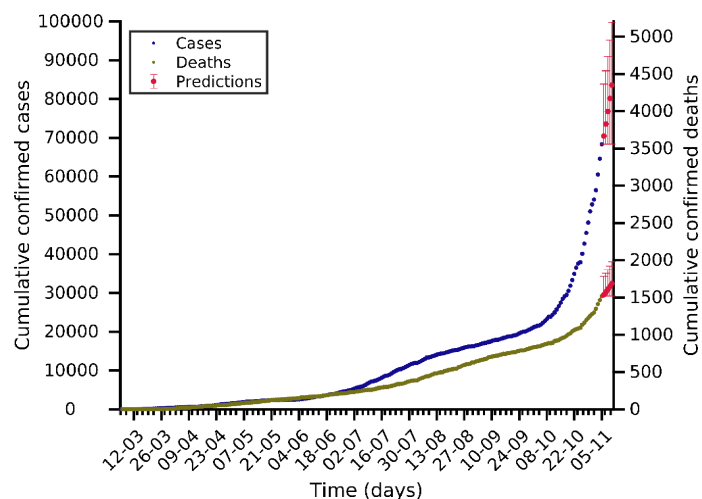
Risk diagram



Risk diagram (last 15 days)



Bulgaria 05-11-2020. Pop: 6.9M. Cumulative incidence: 984/10⁵

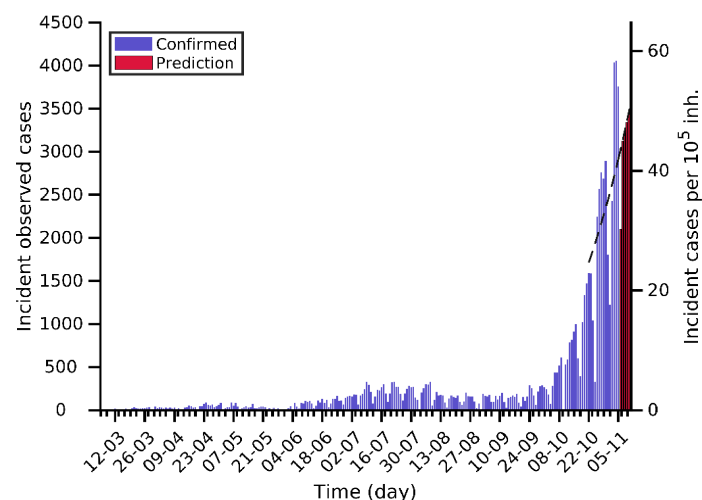


Predictions for next days

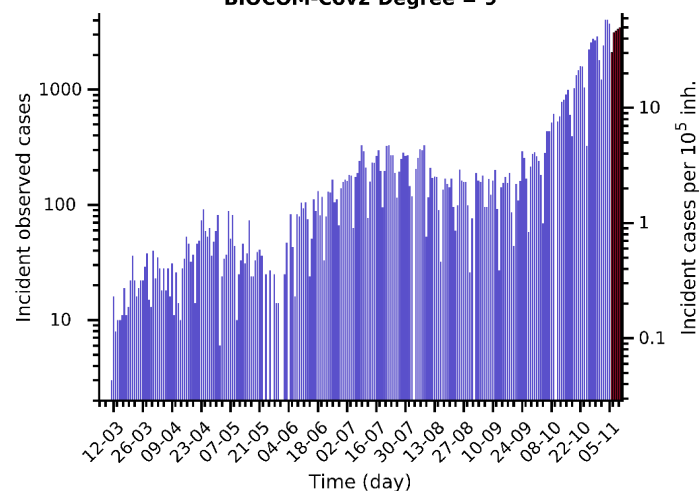
Day	Number of cases	95% Confidence Interval
06-11-2020	70446 (+2101)	[68345 - 83880]
08-11-2020	76803 (+3232)	[68345 - 91017]
10-11-2020	83601 (+3455)	[68345 - 99748]

Current indicators

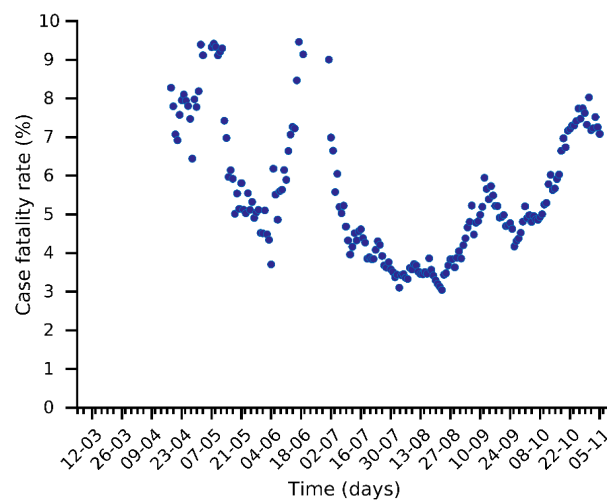
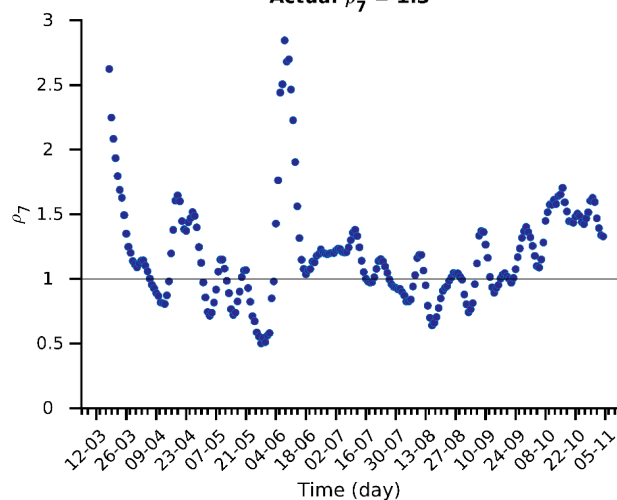
A ₁₄	EPG	CFR
481	639	7.08 %



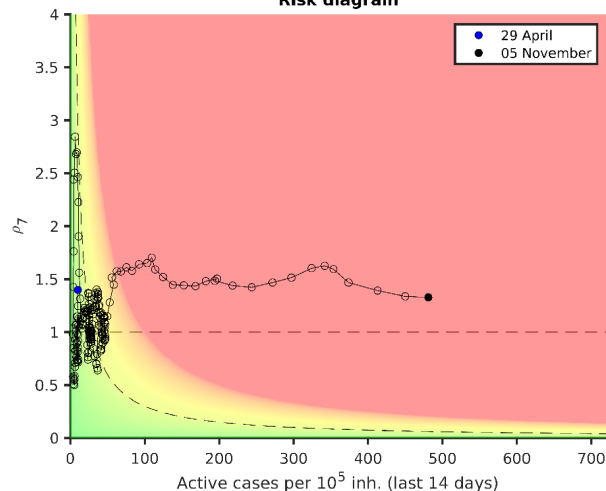
BIOCOM-Cov2 Degree = 9



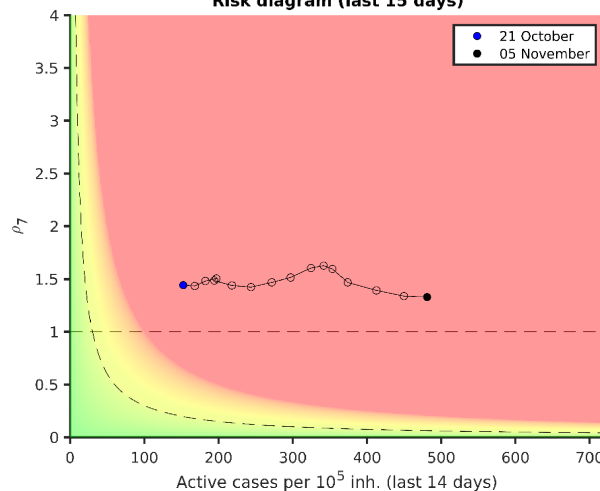
Actual $\rho_7 = 1.3$



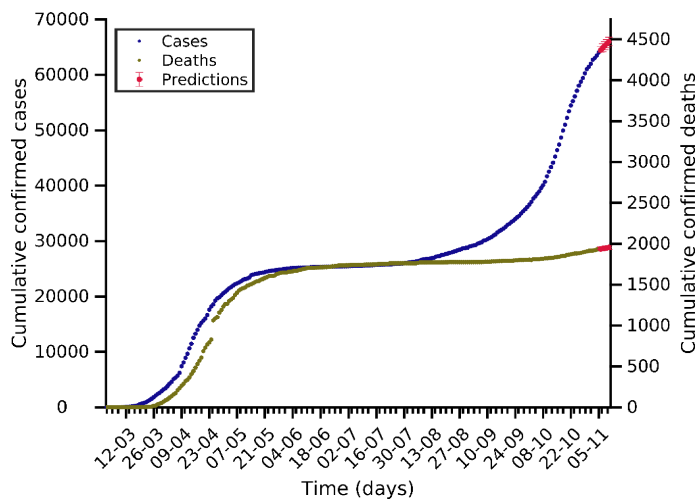
Risk diagram



Risk diagram (last 15 days)



Ireland 05-11-2020. Pop: 4.9M. Cumulative incidence: 1297/10⁵

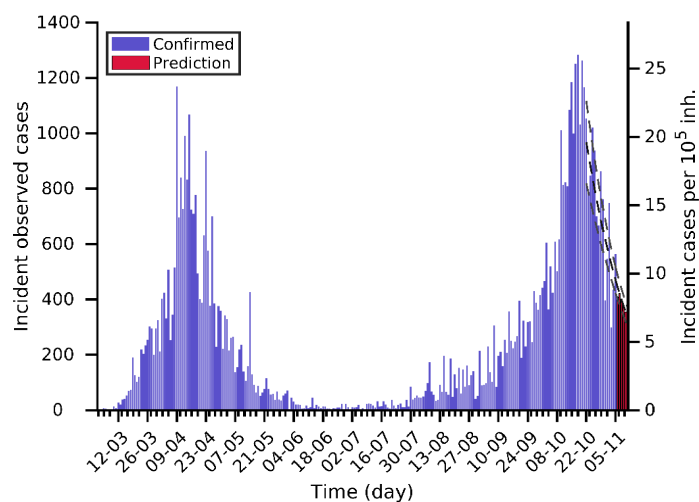


Predictions for next days

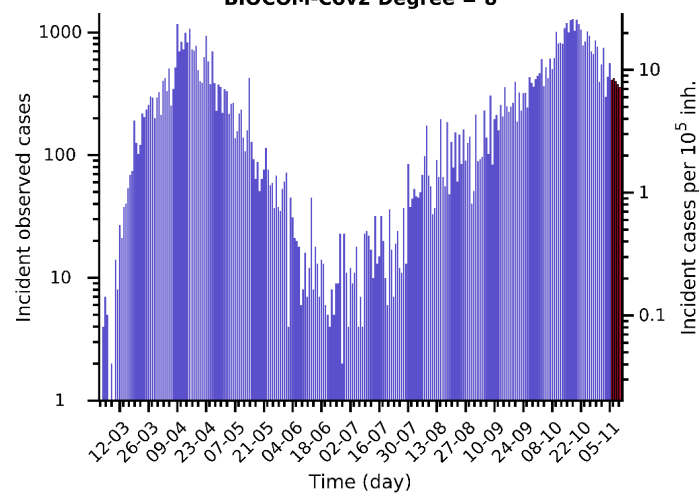
Day	Number of cases	95% Confidence Interval
06-11-2020	64454 (+408)	[64046 - 65171]
08-11-2020	65273 (+398)	[64538 - 66007]
10-11-2020	66002 (+354)	[65235 - 66770]

Current indicators

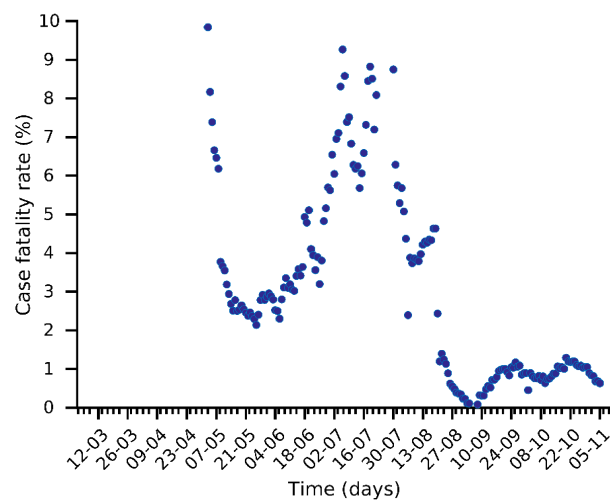
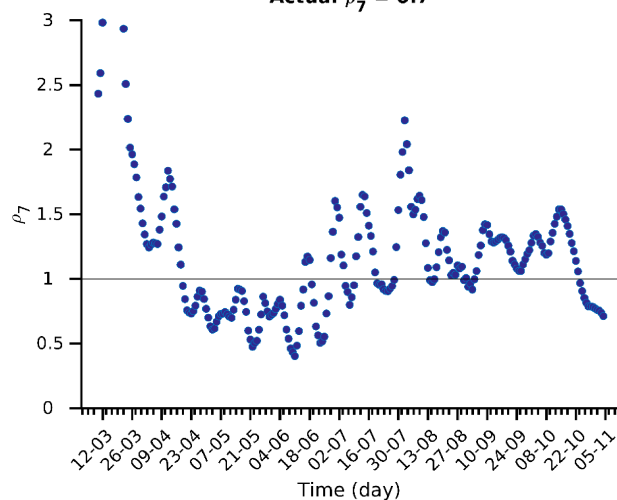
A ₁₄	EPG	CFR
194	138	0.63 %



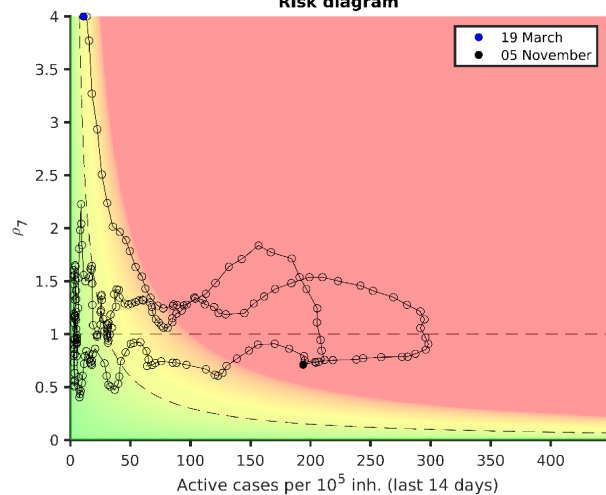
BIOCOM-Cov2 Degree = 8



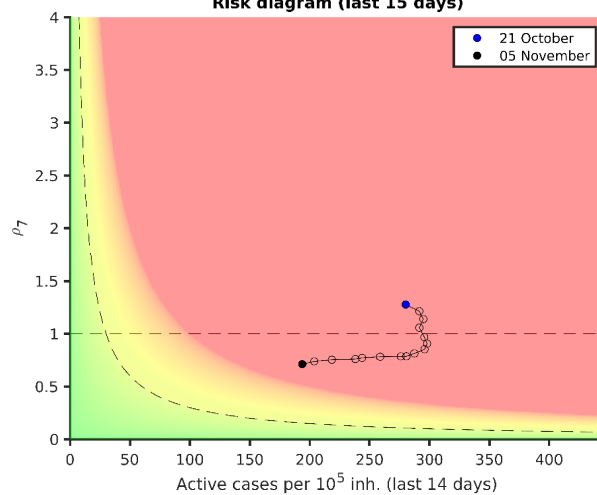
Actual $\rho_7 = 0.7$



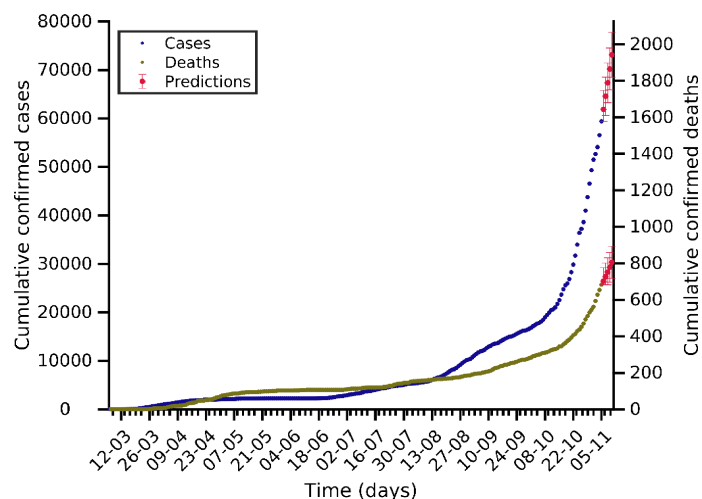
Risk diagram



Risk diagram (last 15 days)



Croatia 05-11-2020. Pop: 4.1M. Cumulative incidence: 1447/10⁵

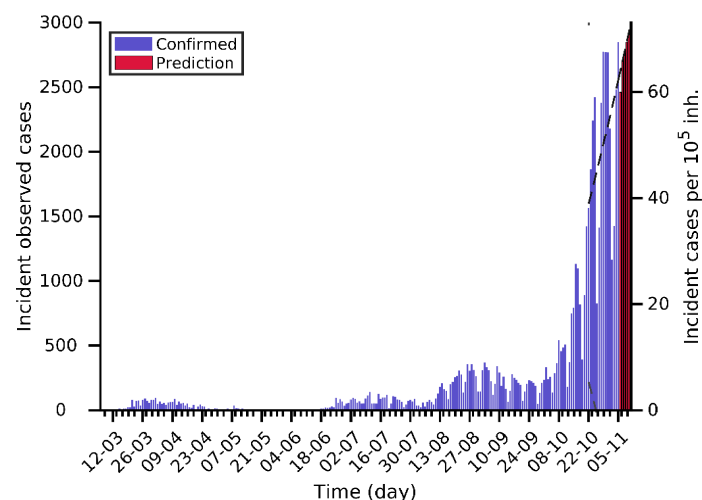


Predictions for next days

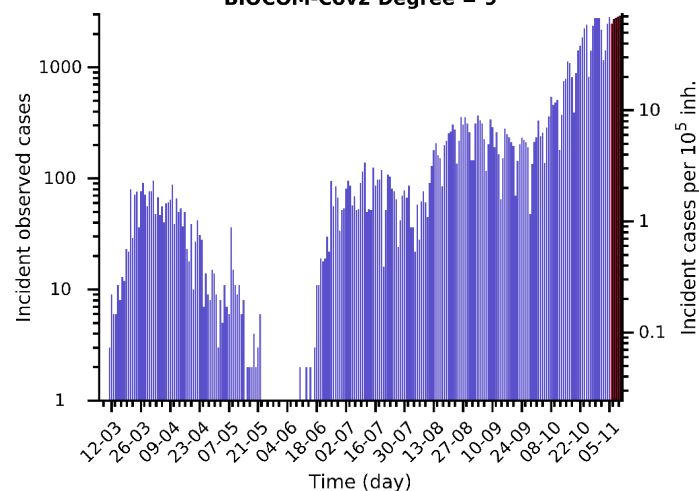
Day	Number of cases	95% Confidence Interval
06-11-2020	61876 (+2461)	[59415 - 65767]
08-11-2020	67351 (+2774)	[63245 - 71457]
10-11-2020	73116 (+2919)	[68488 - 77744]

Current indicators

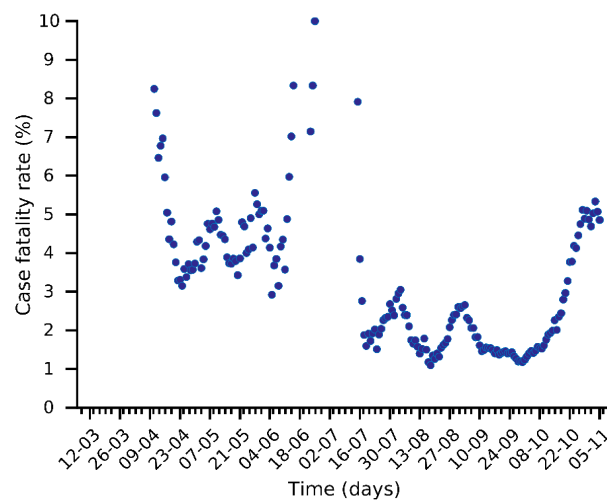
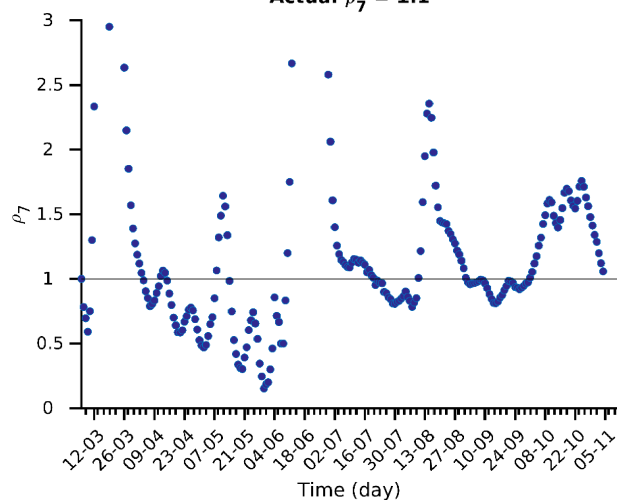
A ₁₄	EPG	CFR
720	762	4.85 %



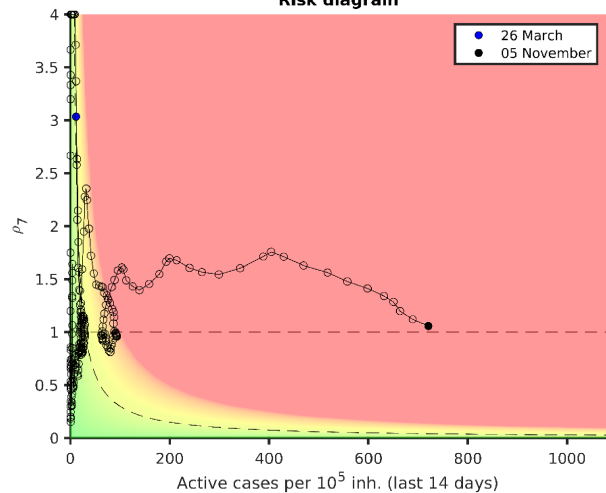
BIOCOM-Cov2 Degree = 9



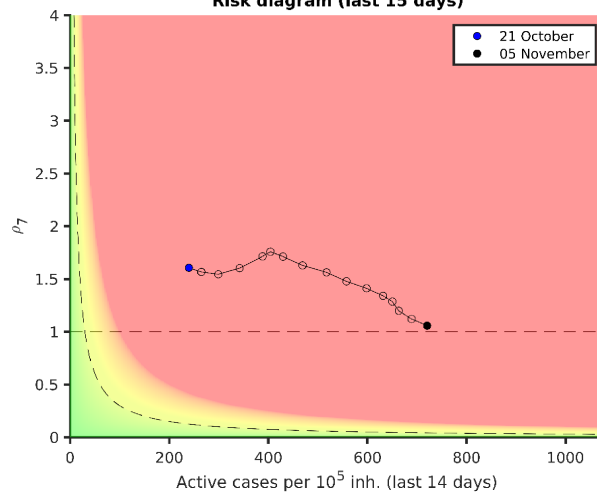
Actual $\rho_7 = 1.1$



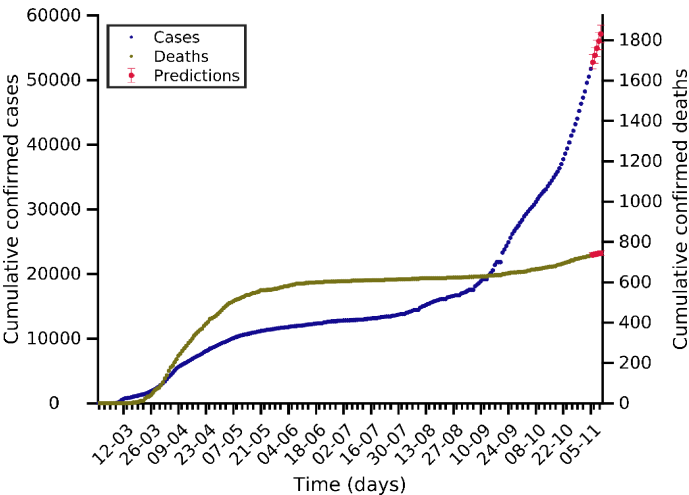
Risk diagram



Risk diagram (last 15 days)

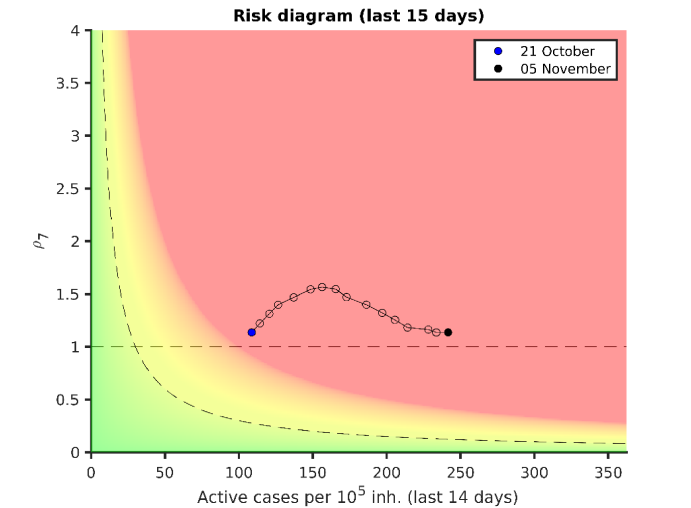
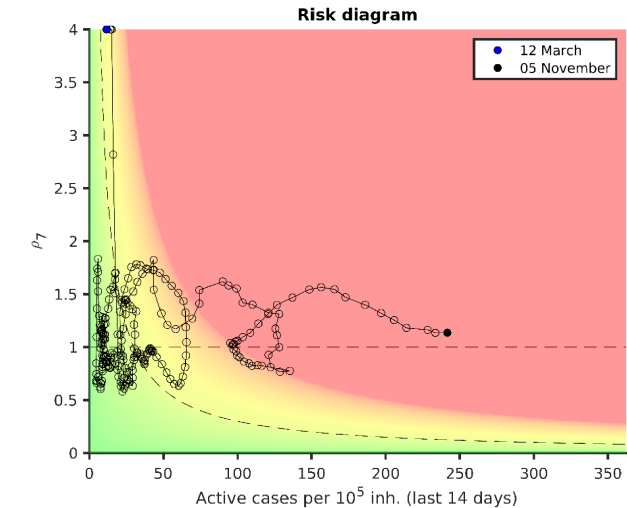
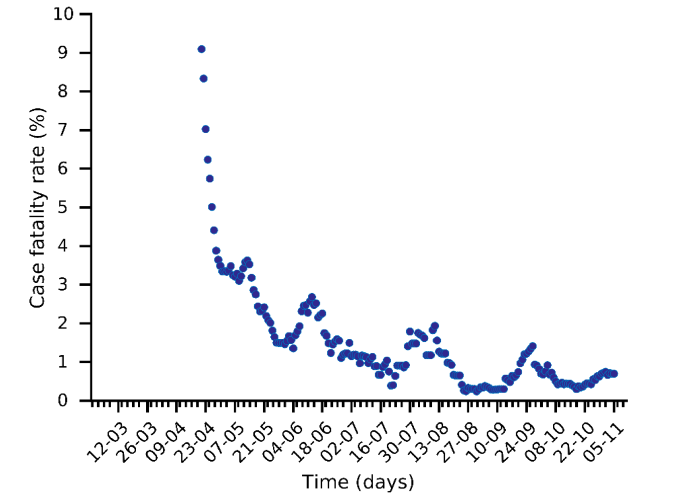
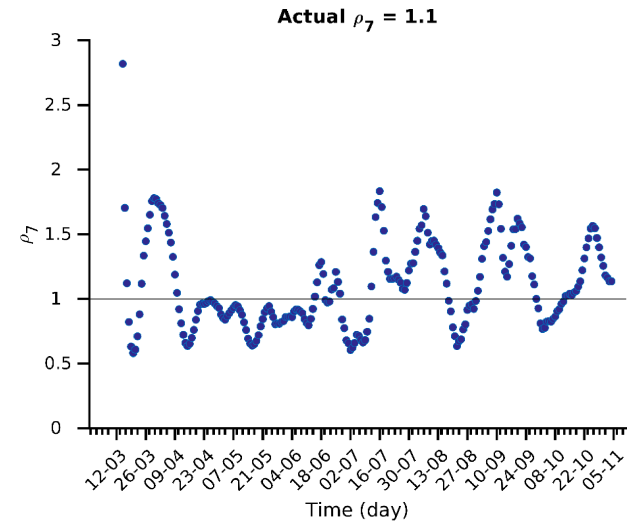
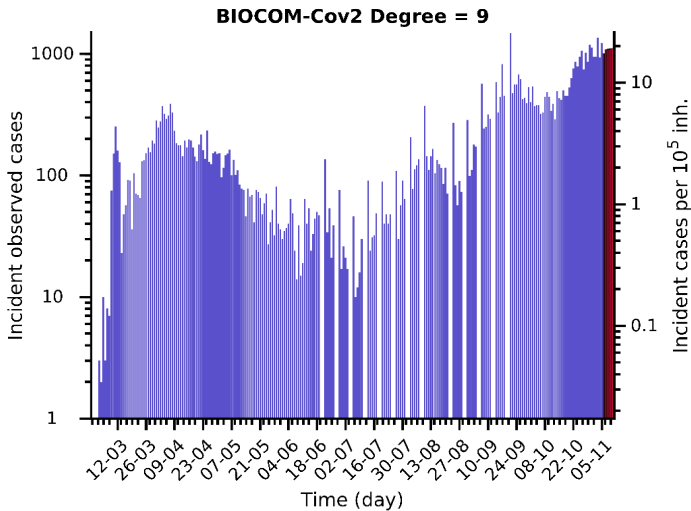
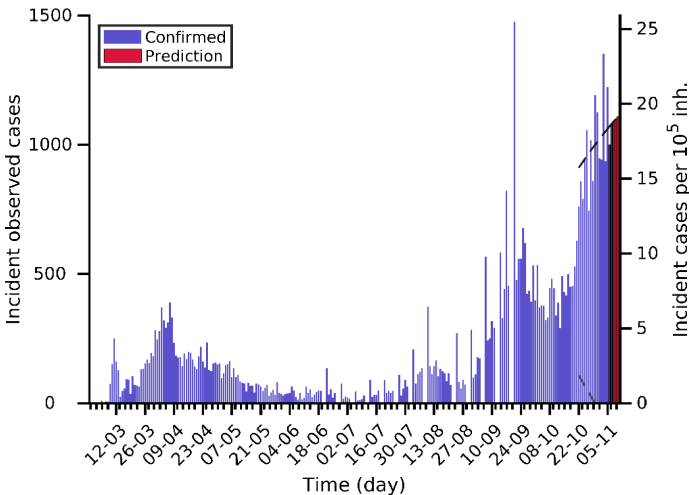


Denmark 05-11-2020. Pop: 5.8M. Cumulative incidence: 893/10⁵

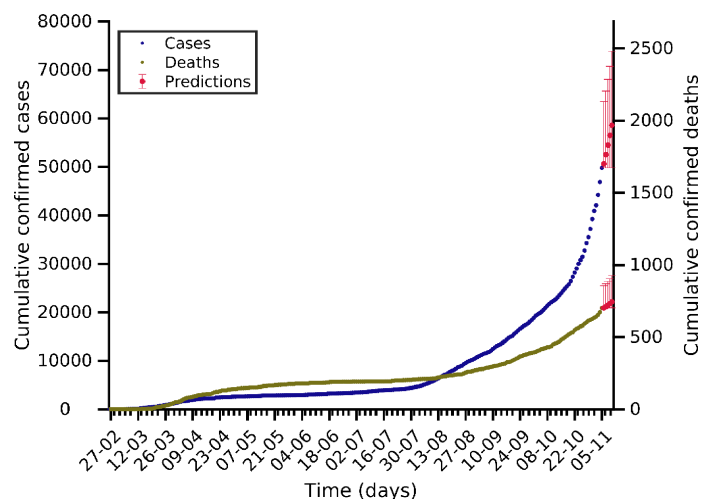


Predictions for next days		
Day	Number of cases	95% Confidence Interval
06-11-2020	52754 (+1001)	[51753 - 53965]
08-11-2020	54926 (+1091)	[53661 - 56191]
10-11-2020	57135 (+1109)	[55749 - 58521]

Current indicators		
A ₁₄	EPG	CFR
242	274	0.69 %



Greece 05-11-2020. Pop: 10.4M. Cumulative incidence: 478/10⁵

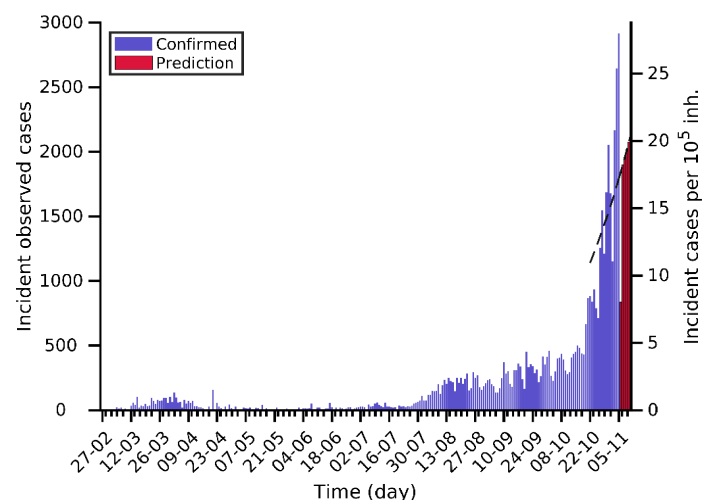


Predictions for next days

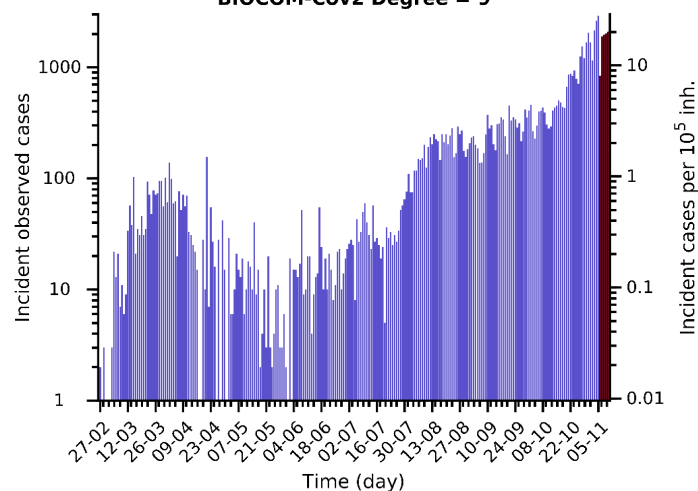
Day	Number of cases	95% Confidence Interval
06-11-2020	50644 (+837)	[49807 - 63478]
08-11-2020	54500 (+1957)	[49807 - 68040]
10-11-2020	58590 (+2075)	[49807 - 73846]

Current indicators

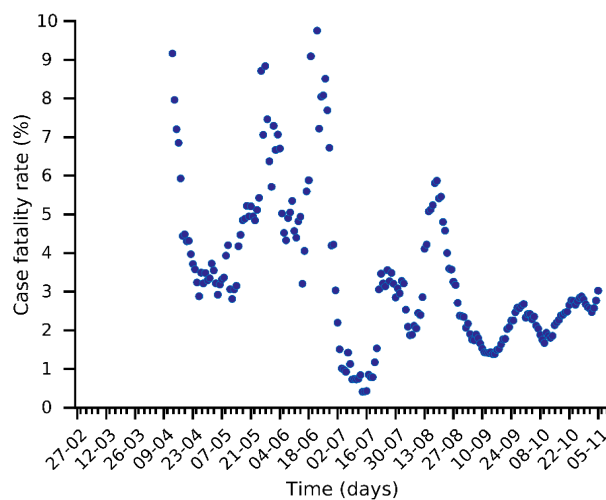
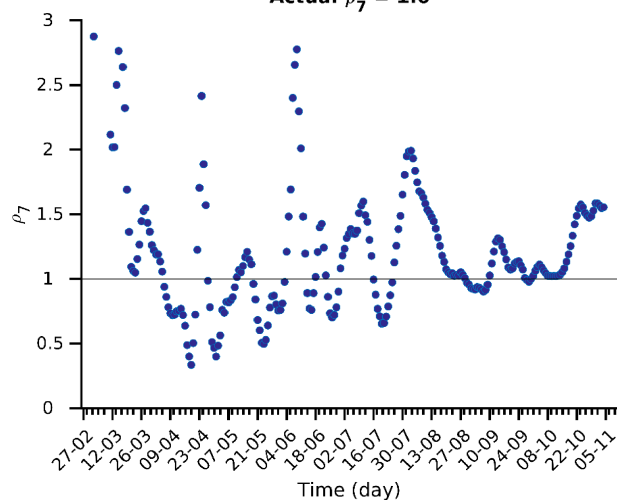
A ₁₄	EPG	CFR
207	322	3.02 %



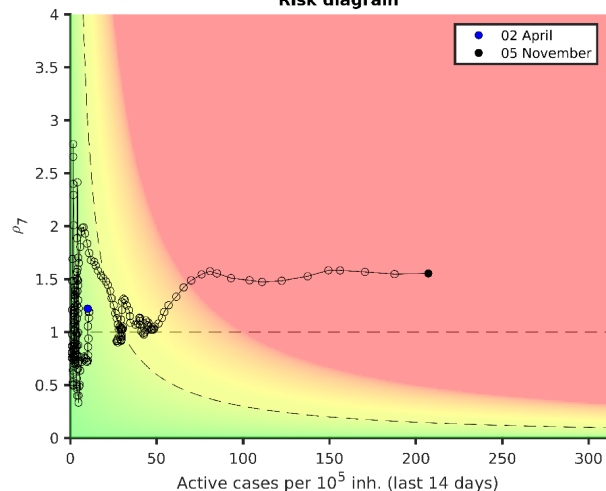
BIOCOM-Cov2 Degree = 9



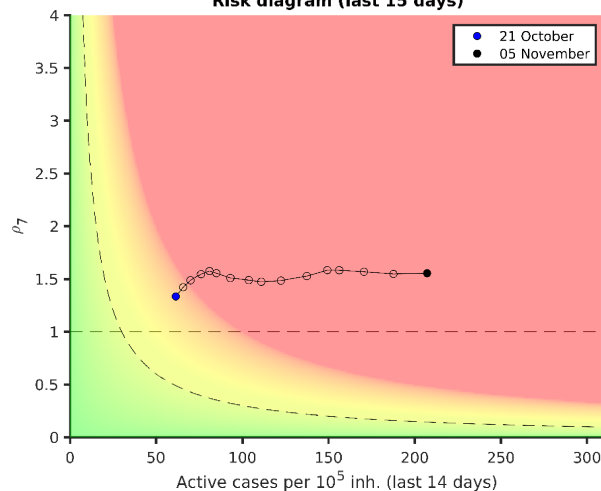
Actual $\rho_7 = 1.6$



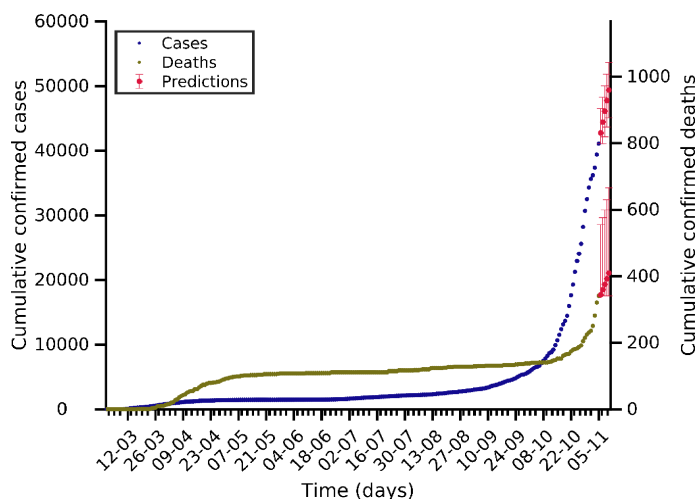
Risk diagram



Risk diagram (last 15 days)



Slovenia 05-11-2020. Pop: 2.1M. Cumulative incidence: 1977/10⁵

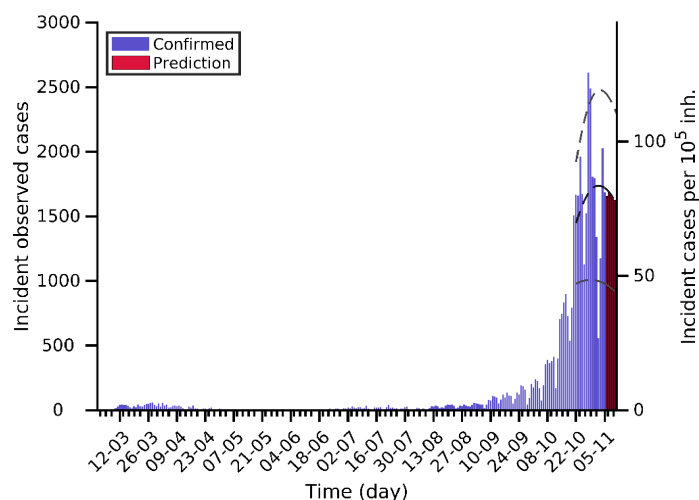


Predictions for next days

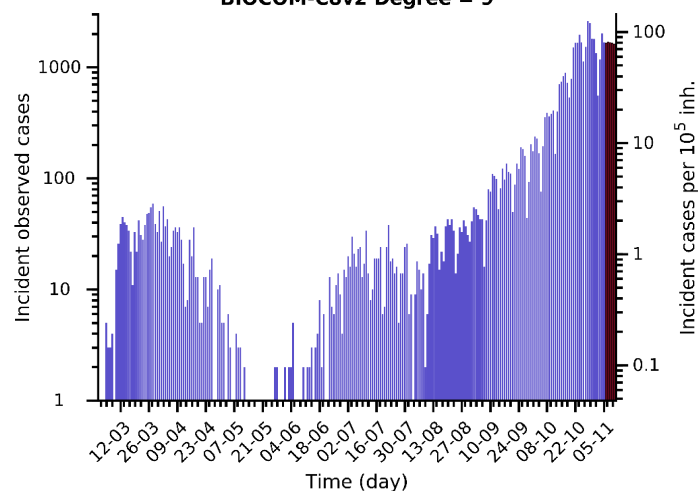
Day	Number of cases	95% Confidence Interval
06-11-2020	42751 (+1657)	[41094 - 46524]
08-11-2020	46112 (+1671)	[42175 - 50050]
10-11-2020	49384 (+1623)	[45096 - 53673]

Current indicators

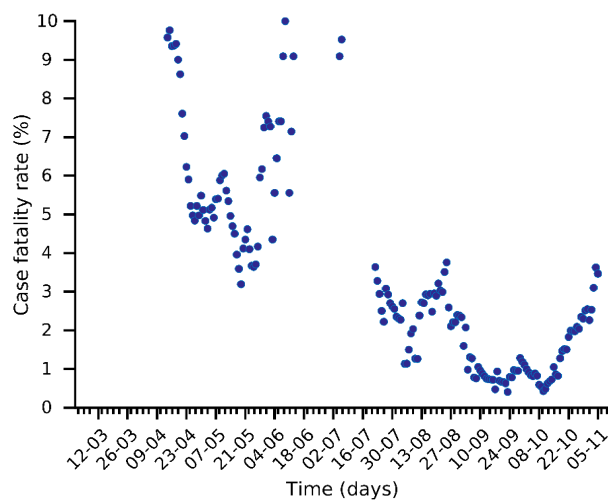
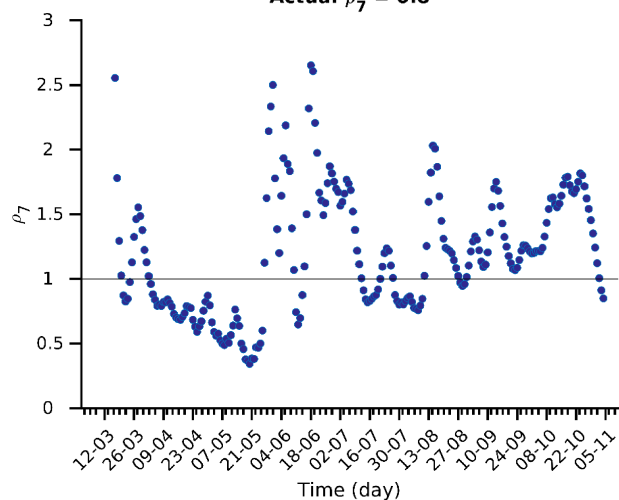
A ₁₄	EPG	CFR
1128	958	3.47 %



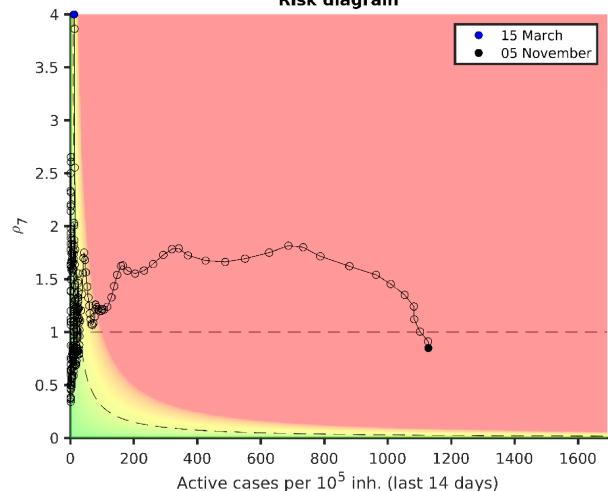
BIOCOM-Cov2 Degree = 9



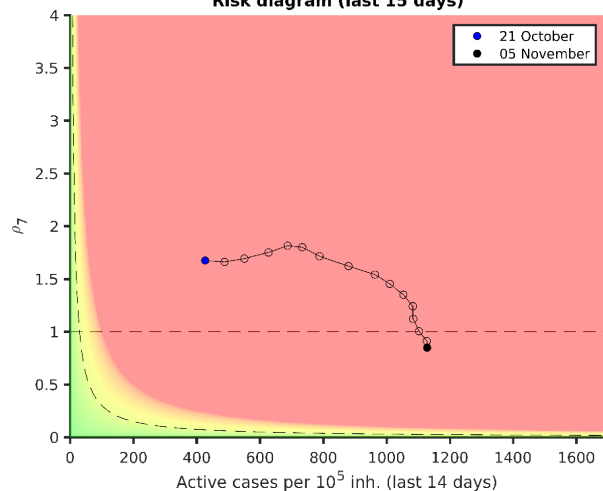
Actual $\rho_7 = 0.8$



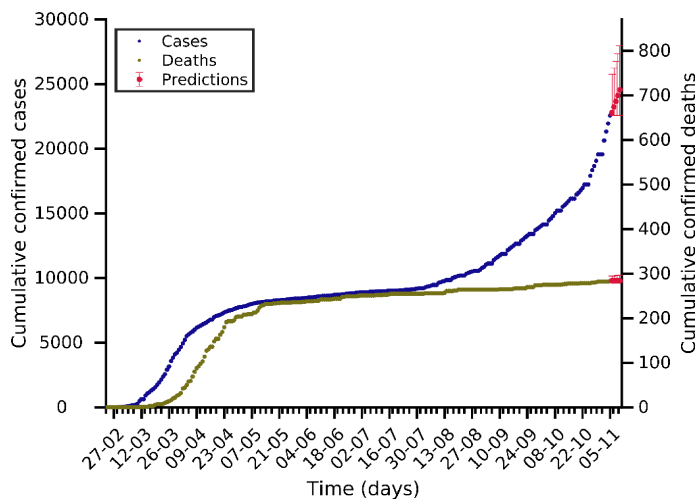
Risk diagram



Risk diagram (last 15 days)



Norway 05-11-2020. Pop: 5.4M. Cumulative incidence: 416/10⁵

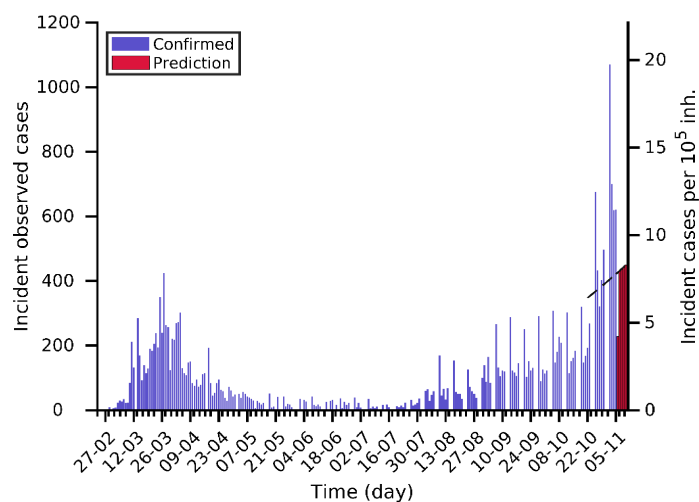


Predictions for next days

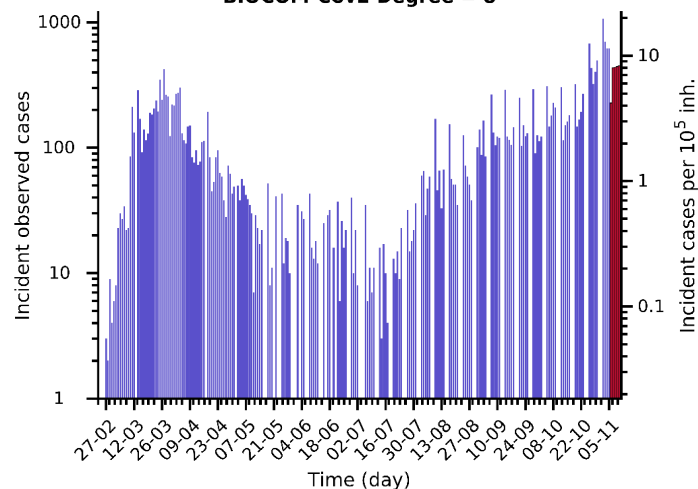
Day	Number of cases	95% Confidence Interval
06-11-2020	22803 (+228)	[22575 - 25758]
08-11-2020	23673 (+438)	[22575 - 26763]
10-11-2020	24565 (+449)	[22575 - 27960]

Current indicators

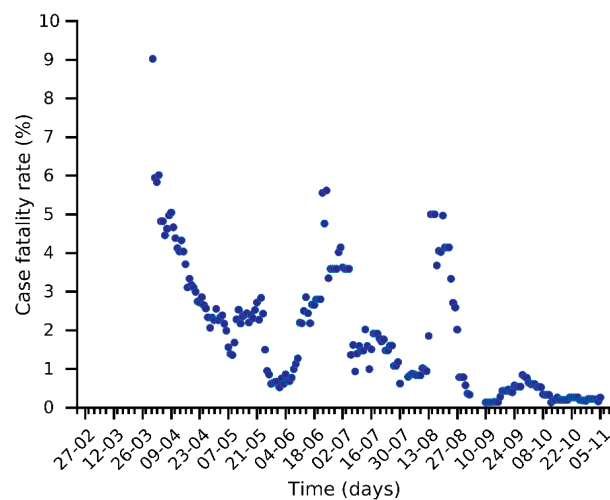
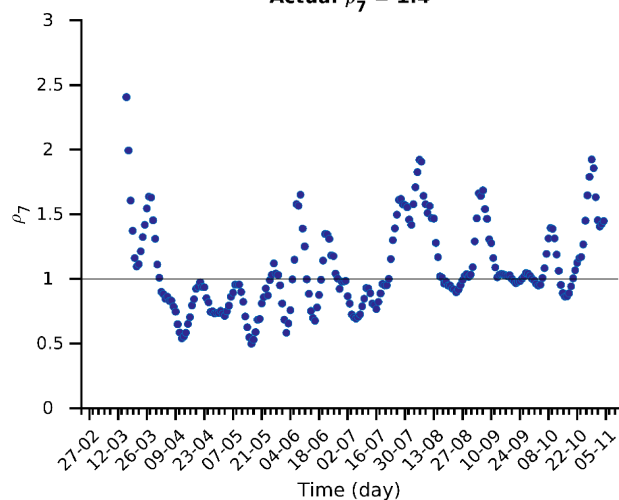
A ₁₄	EPG	CFR
104	150	0.26 %



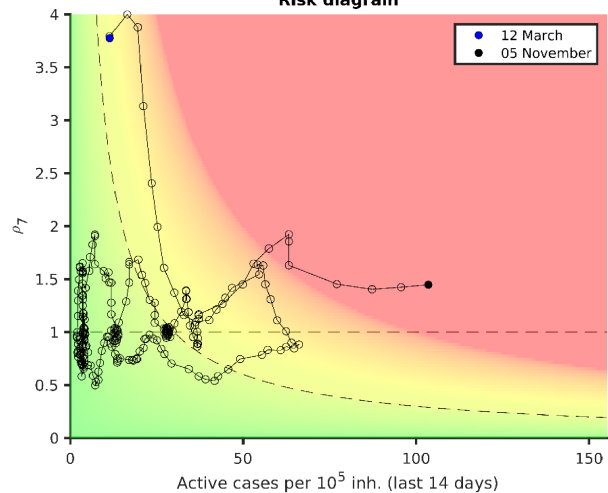
BIOCOM-Cov2 Degree = 8



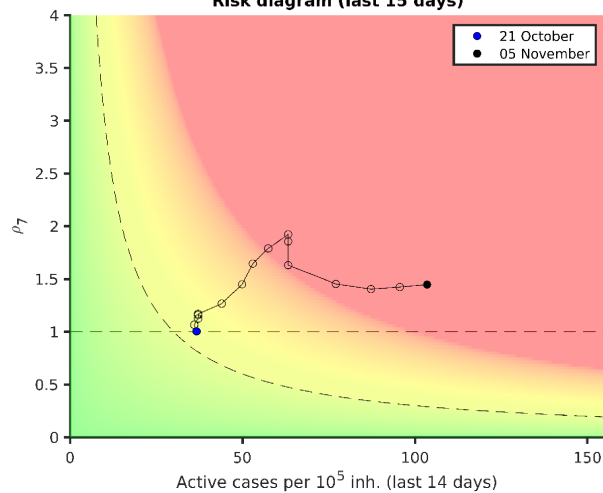
Actual $\rho_7 = 1.4$



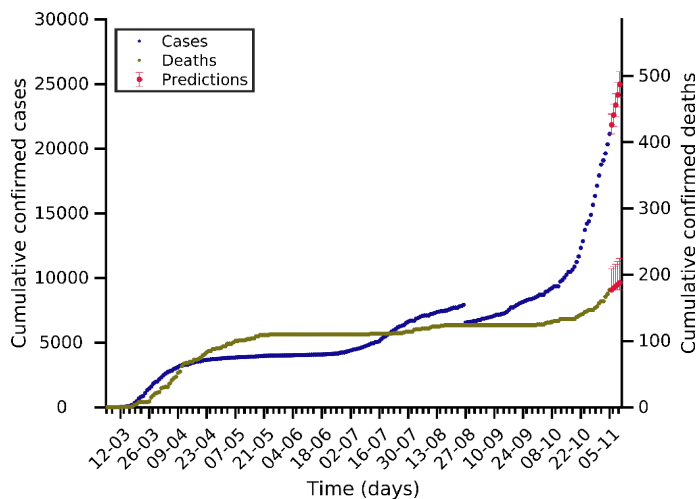
Risk diagram



Risk diagram (last 15 days)



Luxembourg 05-11-2020. Pop: 0.6M. Cumulative incidence: 3378/10⁵

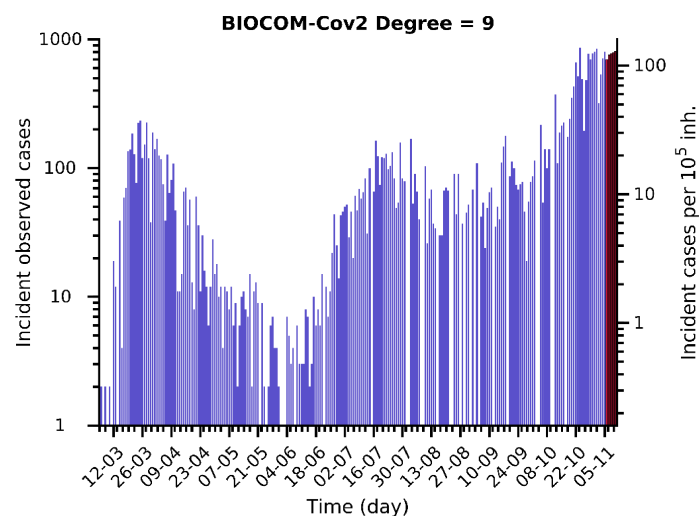
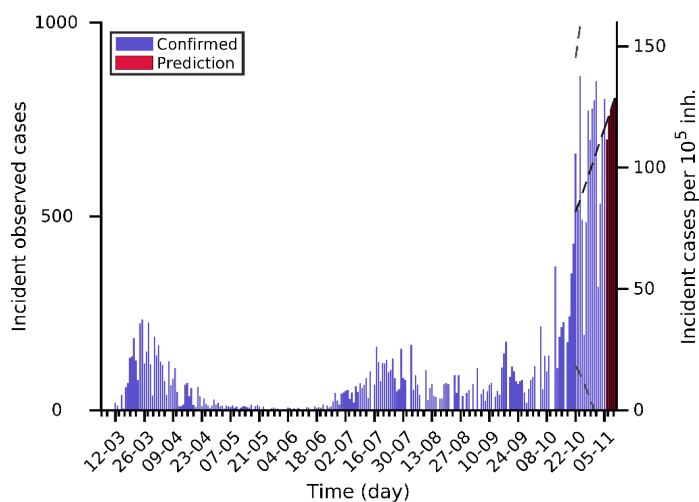


Predictions for next days

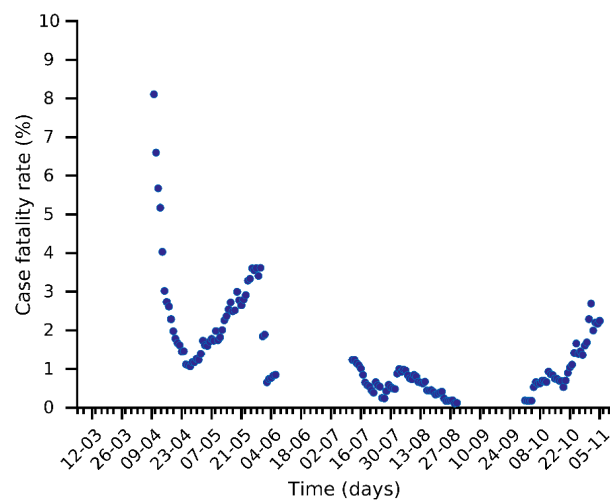
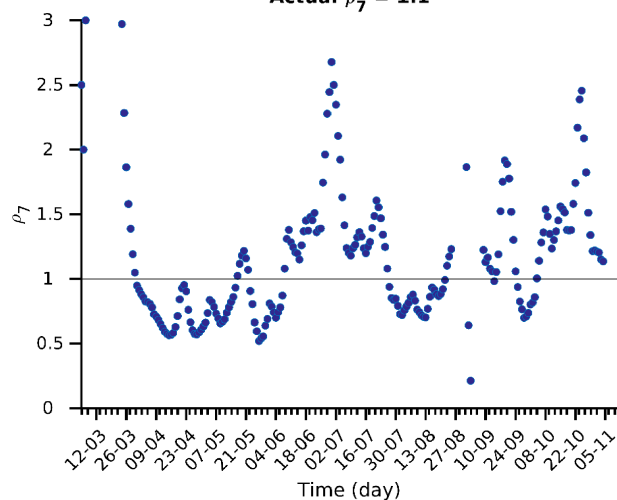
Day	Number of cases	95% Confidence Interval
06-11-2020	21845 (+698)	[21147 - 22690]
08-11-2020	23378 (+775)	[22489 - 24267]
10-11-2020	24974 (+806)	[23983 - 25965]

Current indicators

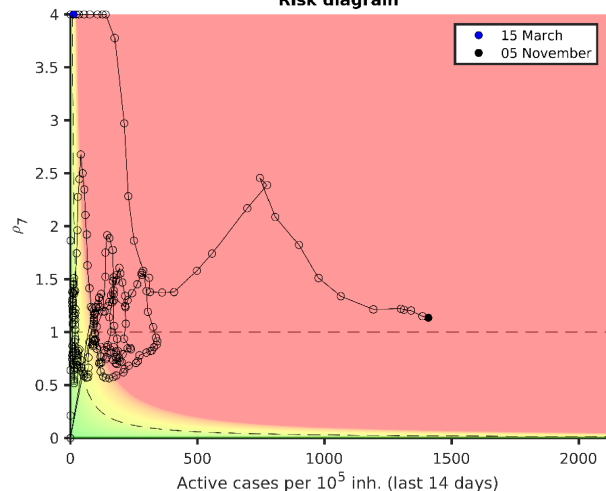
A ₁₄	EPG	CFR
1408	1599	2.24 %



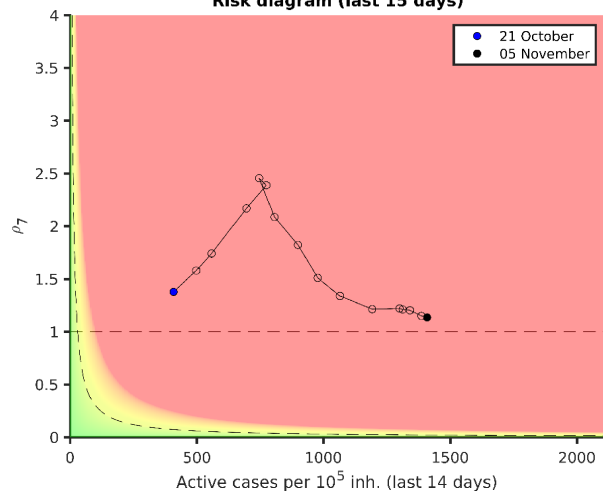
Actual $\rho_7 = 1.1$



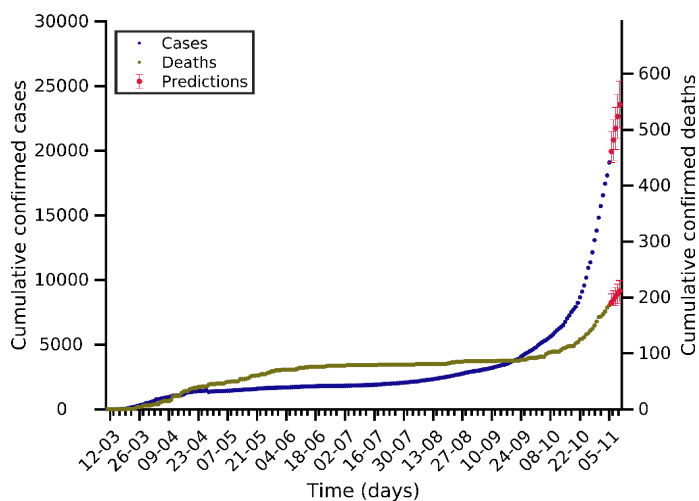
Risk diagram



Risk diagram (last 15 days)



Lithuania 05-11-2020. Pop: 2.7M. Cumulative incidence: 701/10⁵

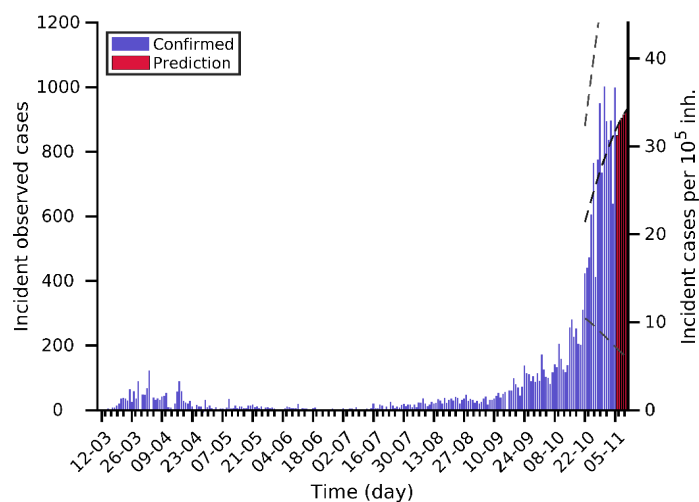


Predictions for next days

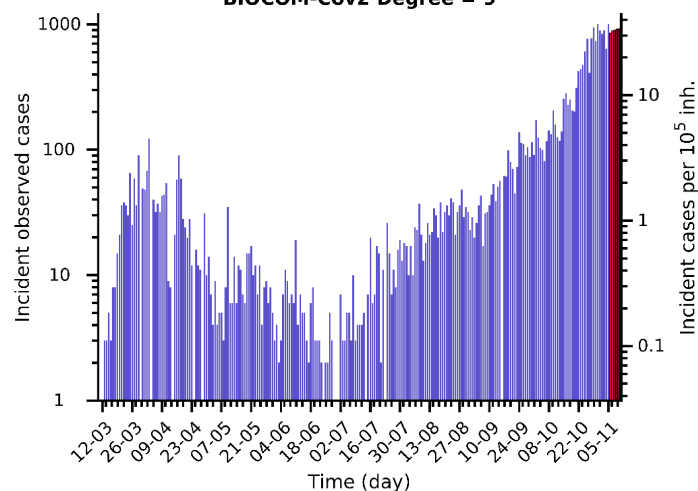
Day	Number of cases	95% Confidence Interval
06-11-2020	19942 (+851)	[19091 - 21488]
08-11-2020	21736 (+903)	[20109 - 23363]
10-11-2020	23576 (+925)	[21763 - 25389]

Current indicators

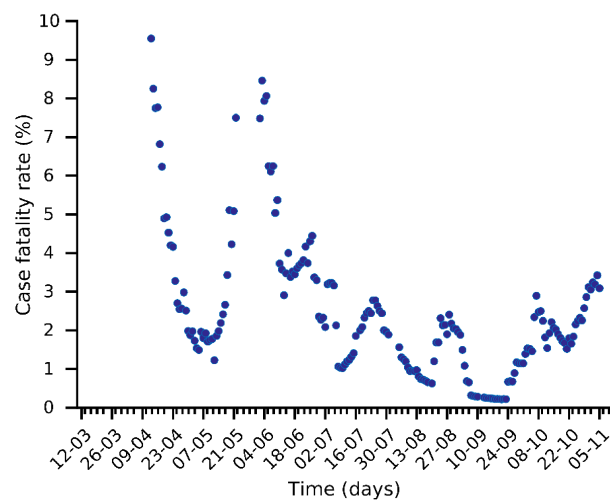
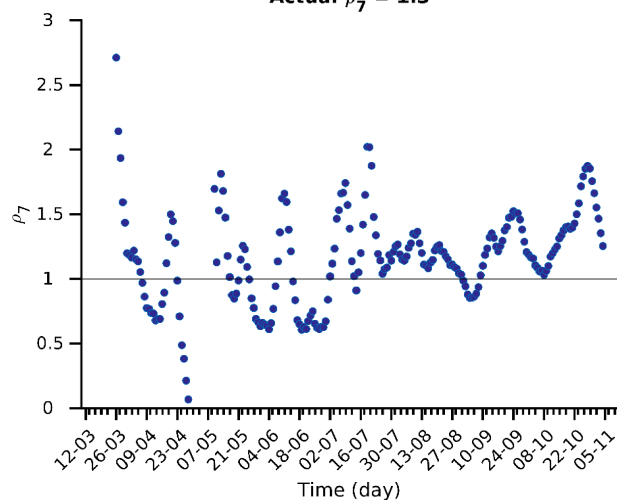
A ₁₄	EPG	CFR
383	480	3.09 %



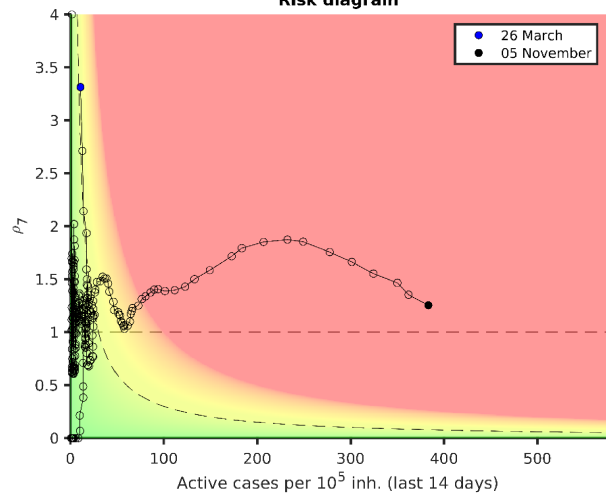
BIOCOM-Cov2 Degree = 9



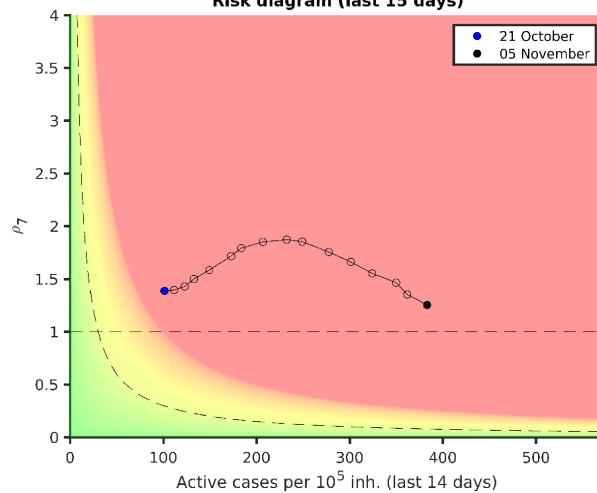
Actual $\rho_7 = 1.3$



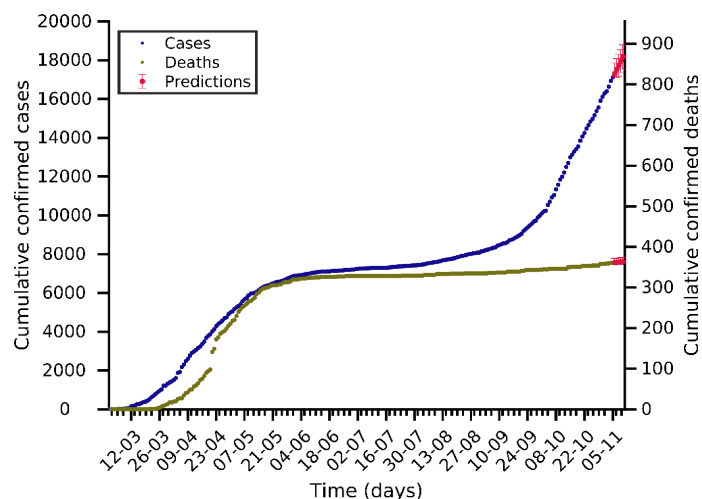
Risk diagram



Risk diagram (last 15 days)



Finland 05-11-2020. Pop: 5.5M. Cumulative incidence: 309/10⁵

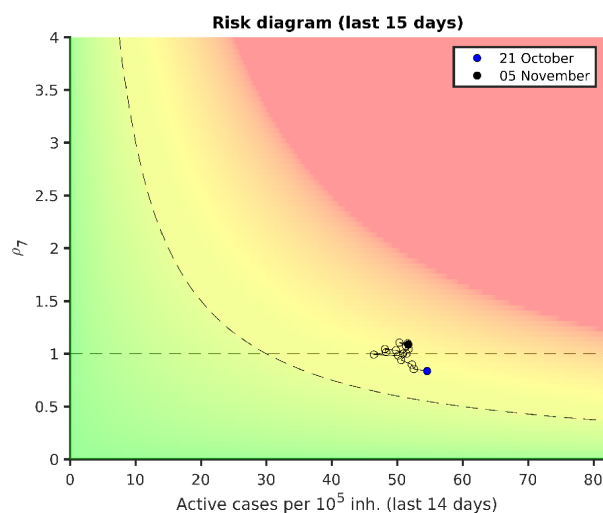
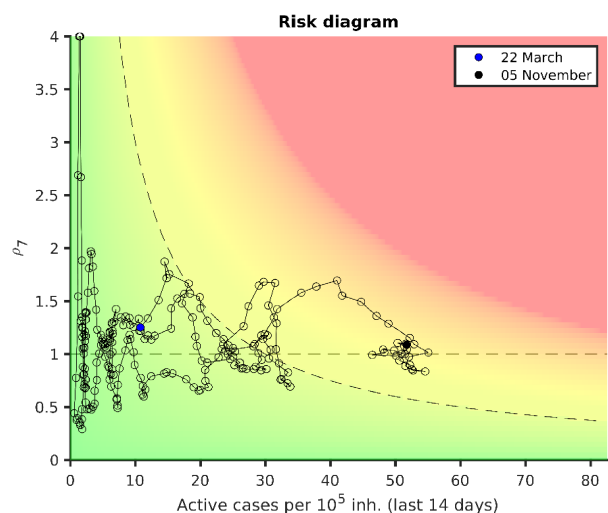
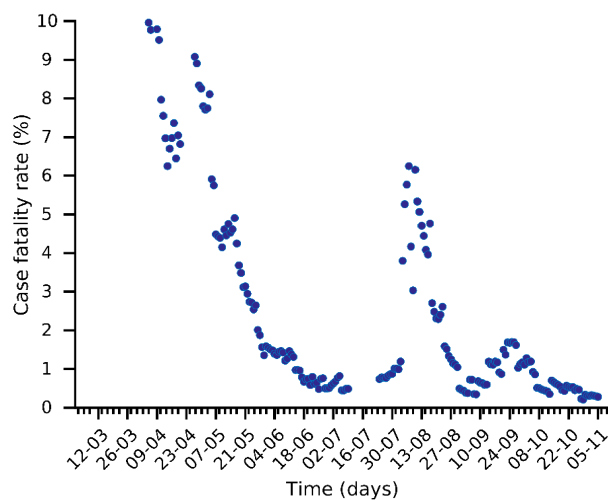
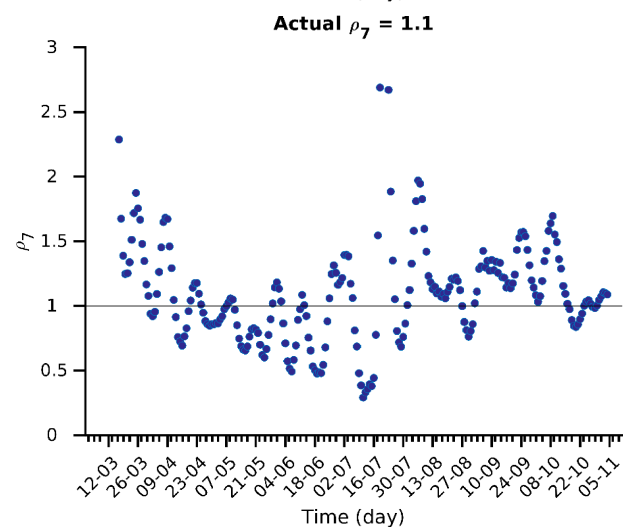
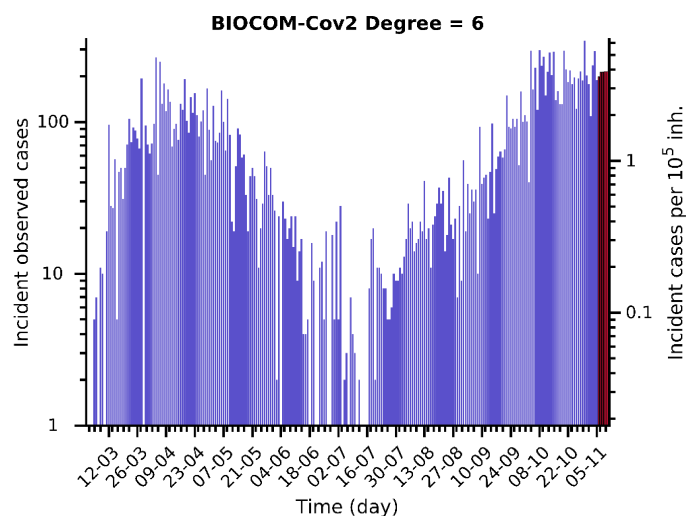
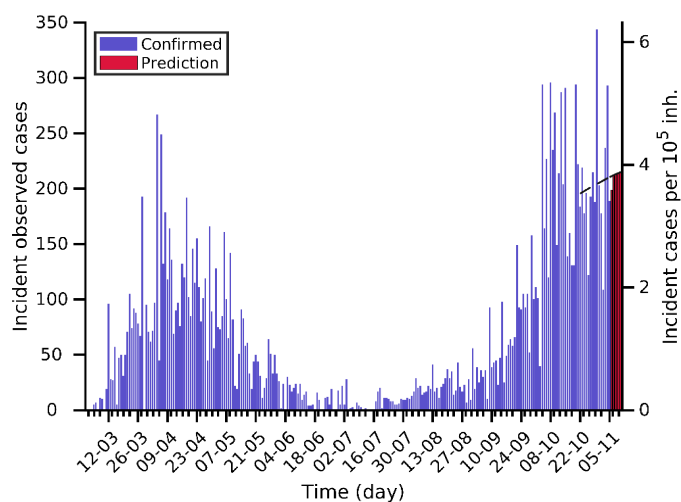


Predictions for next days

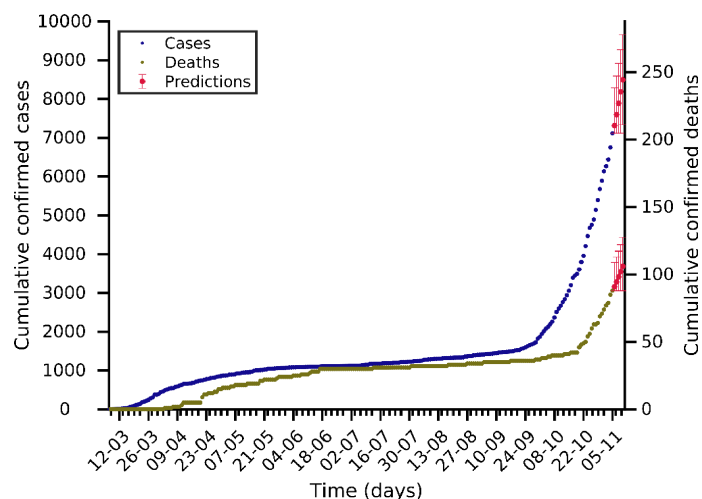
Day	Number of cases	95% Confidence Interval
06-11-2020	17318 (+199)	[17119 - 17864]
08-11-2020	17743 (+213)	[17174 - 18312]
10-11-2020	18172 (+215)	[17553 - 18791]

Current indicators

A ₁₄	EPG	CFR
52	56	0.28 %



Latvia 05-11-2020. Pop: 1.9M. Cumulative incidence: 377/10⁵

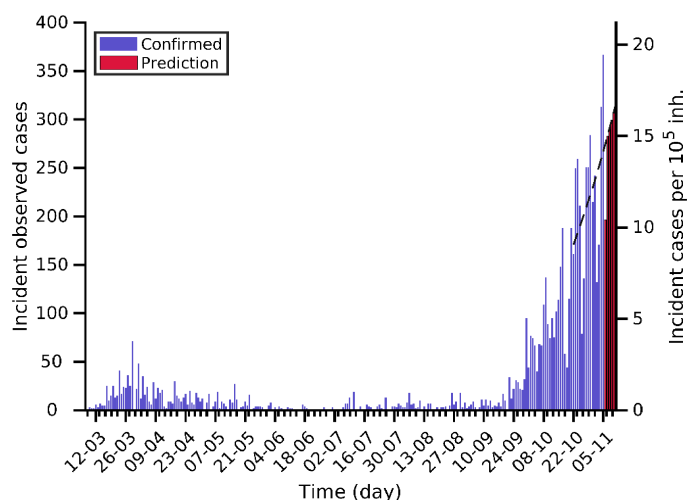


Predictions for next days

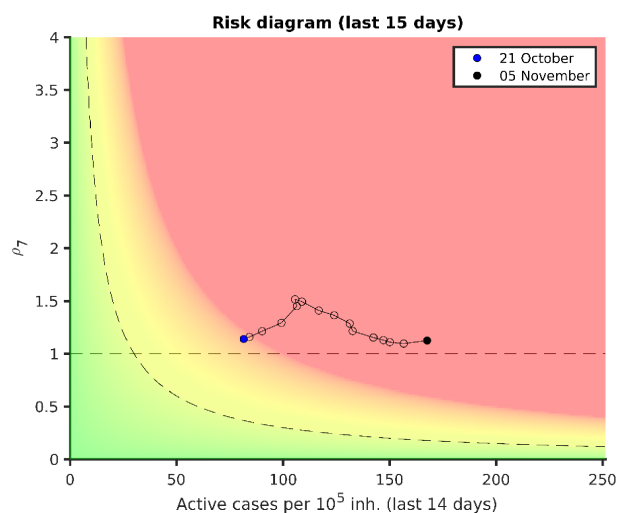
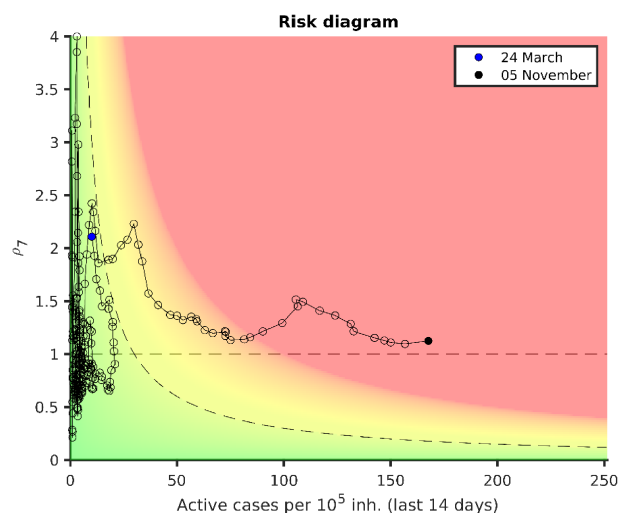
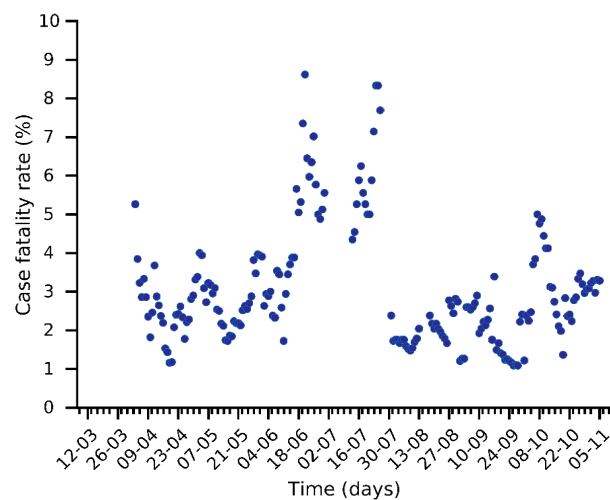
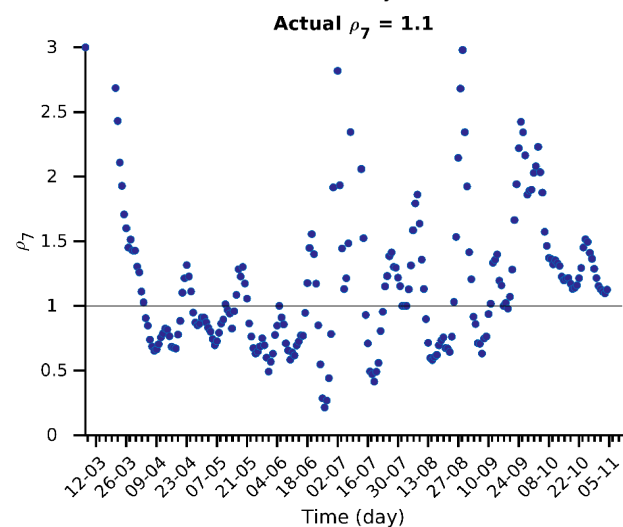
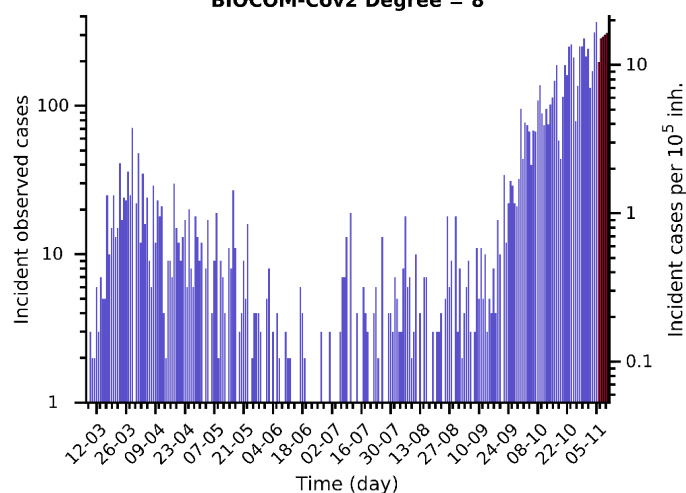
Day	Number of cases	95% Confidence Interval
06-11-2020	7315 (+196)	[7119 - 8294]
08-11-2020	7889 (+291)	[7119 - 8921]
10-11-2020	8496 (+308)	[7334 - 9658]

Current indicators

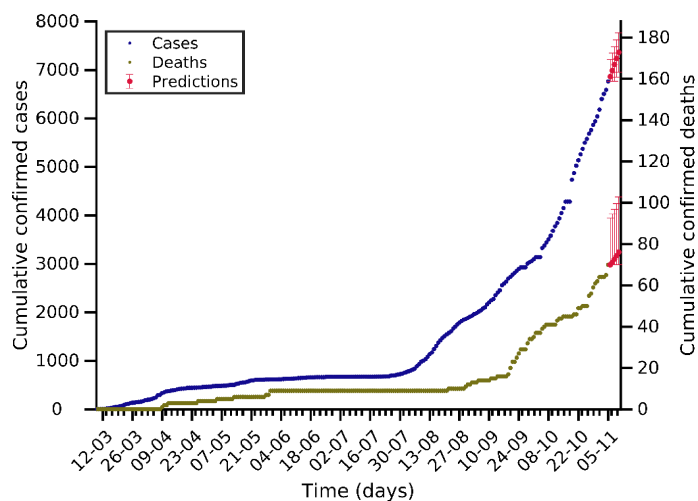
A ₁₄	EPG	CFR
168	189	3.28 %



BIOCOM-Cov2 Degree = 8



Malta 05-11-2020. Pop: 0.4M. Cumulative incidence: 1532/10⁵

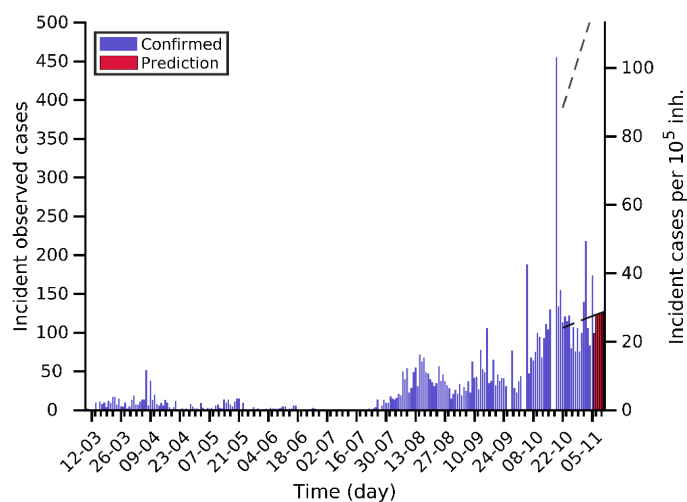


Predictions for next days

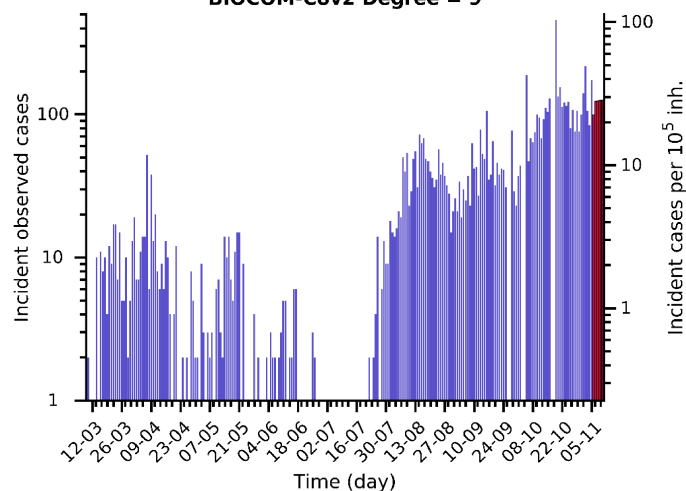
Day	Number of cases	95% Confidence Interval
06-11-2020	6863 (+99)	[6764 - 7217]
08-11-2020	7111 (+124)	[6764 - 7481]
10-11-2020	7362 (+126)	[6958 - 7767]

Current indicators

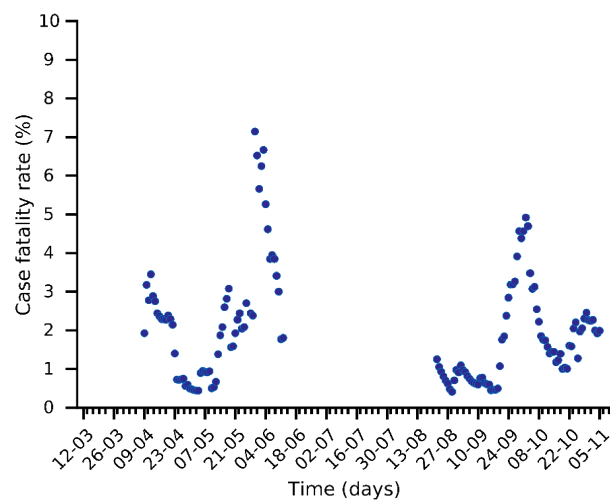
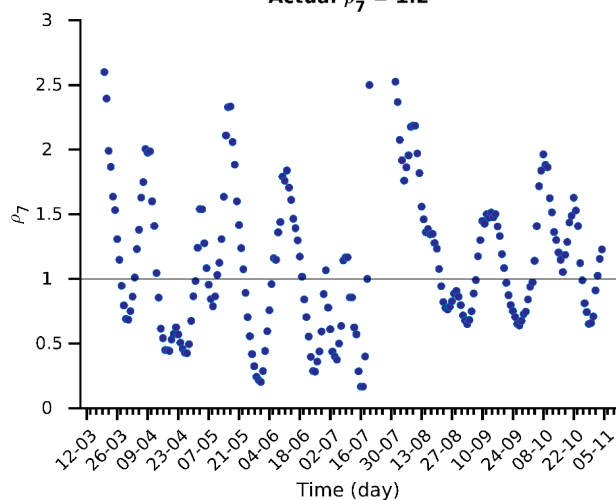
A ₁₄	EPG	CFR
368	452	1.99 %



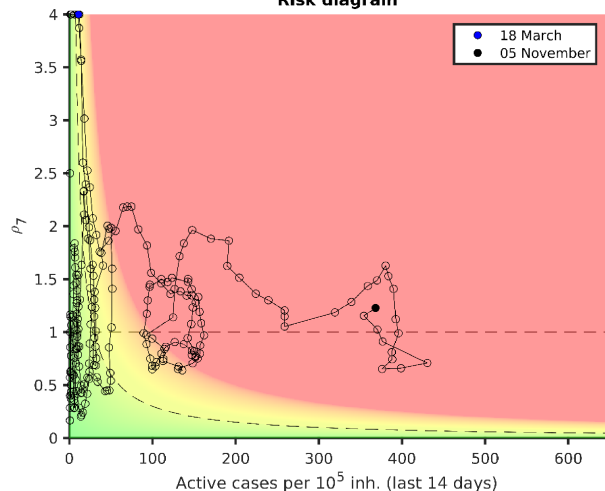
BIOCOM-Cov2 Degree = 9



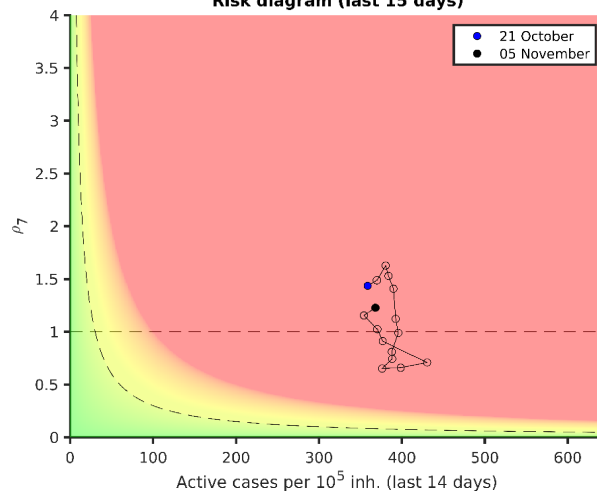
Actual $\rho_7 = 1.2$



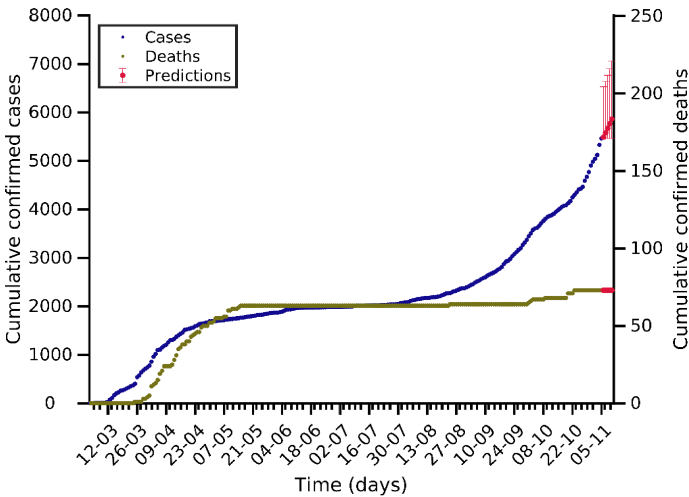
Risk diagram



Risk diagram (last 15 days)

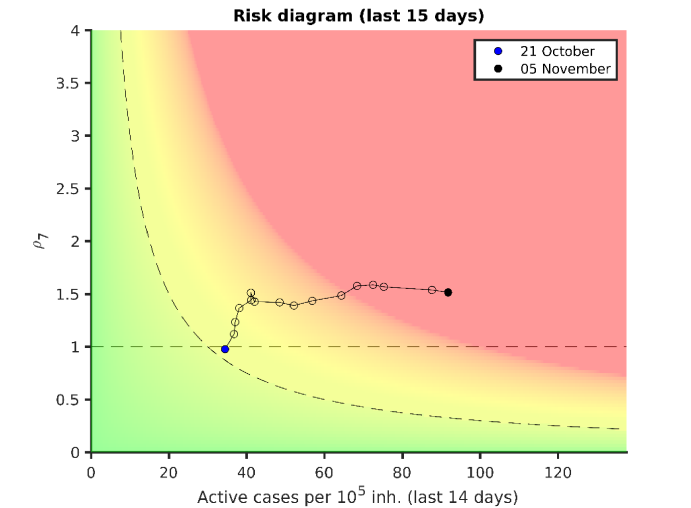
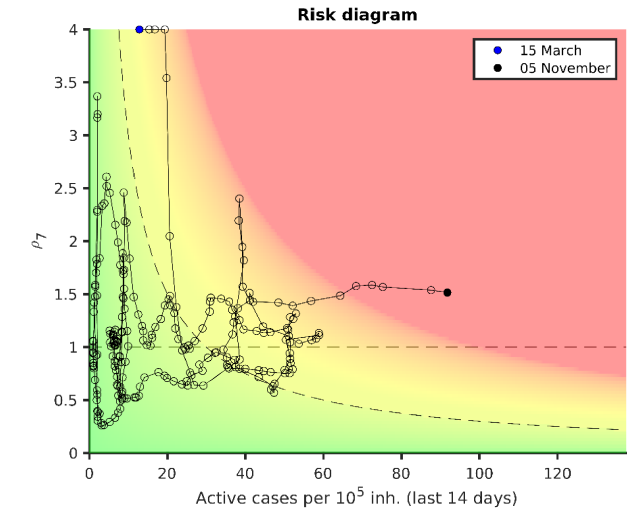
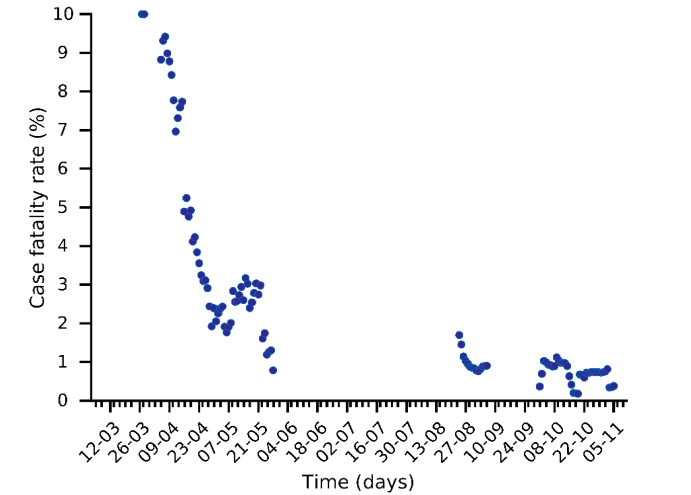
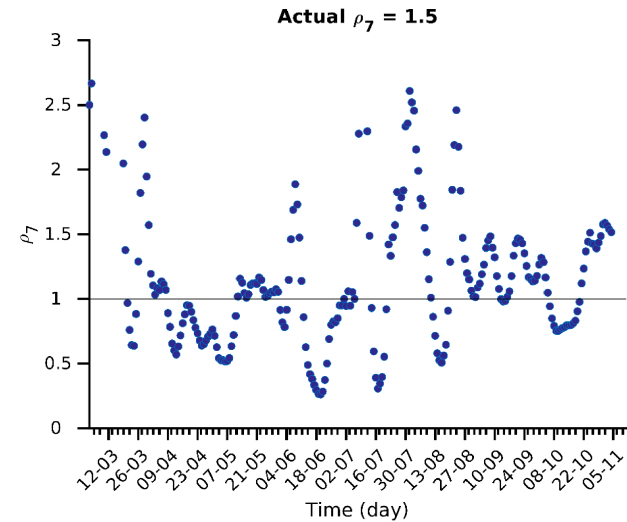
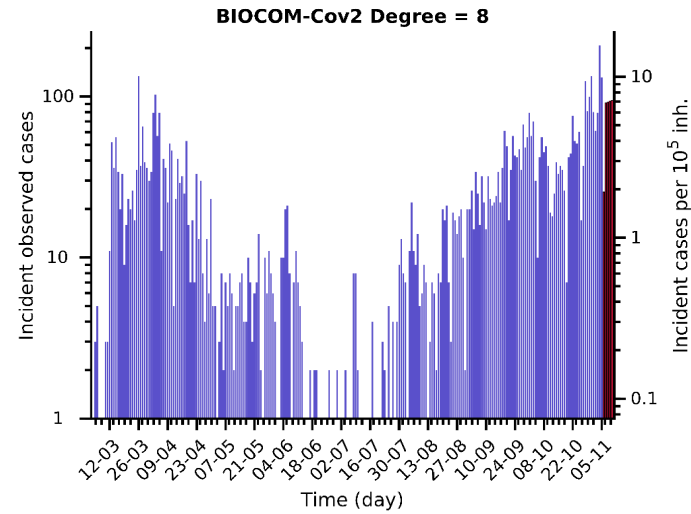
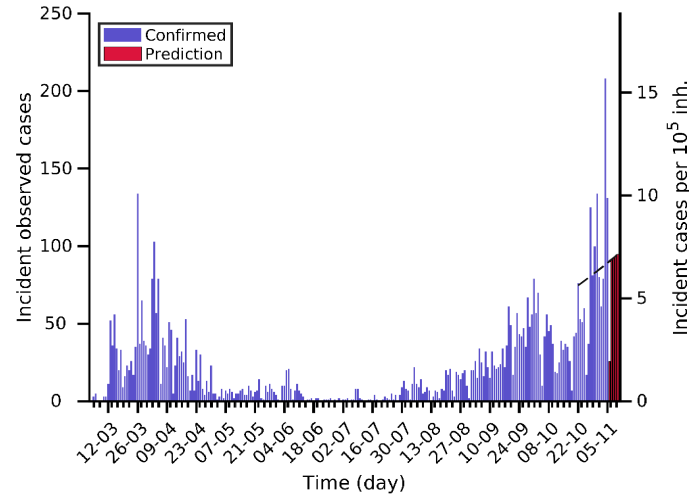


Estonia 05-11-2020. Pop: 1.3M. Cumulative incidence: 412/10⁵

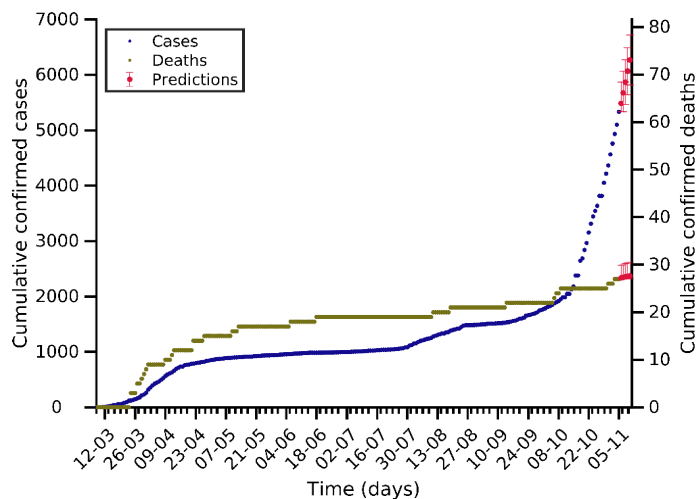


Predictions for next days		
Day	Number of cases	95% Confidence Interval
06-11-2020	5490 (+26)	[5464 - 6534]
08-11-2020	5673 (+92)	[5464 - 6764]
10-11-2020	5862 (+95)	[5464 - 7058]

Current indicators		
A ₁₄	EPG	CFR
92	139	0.38 %



Cyprus 05-11-2020. Pop: 1.2M. Cumulative incidence: 442/10⁵

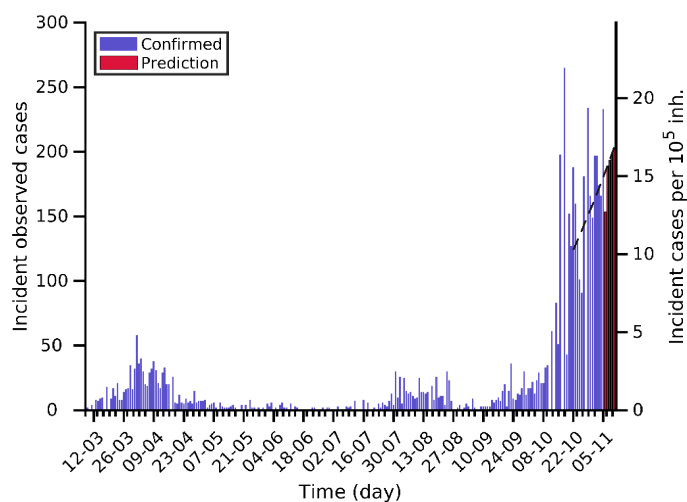


Predictions for next days

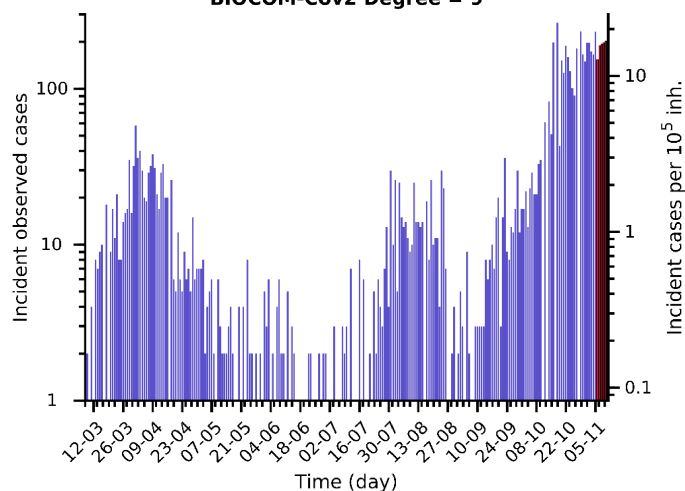
Day	Number of cases	95% Confidence Interval
06-11-2020	5486 (+153)	[5333 - 5871]
08-11-2020	5869 (+193)	[5465 - 6273]
10-11-2020	6269 (+202)	[5817 - 6721]

Current indicators

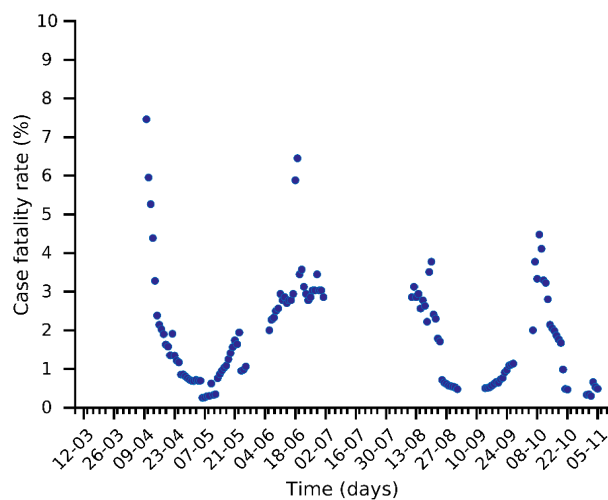
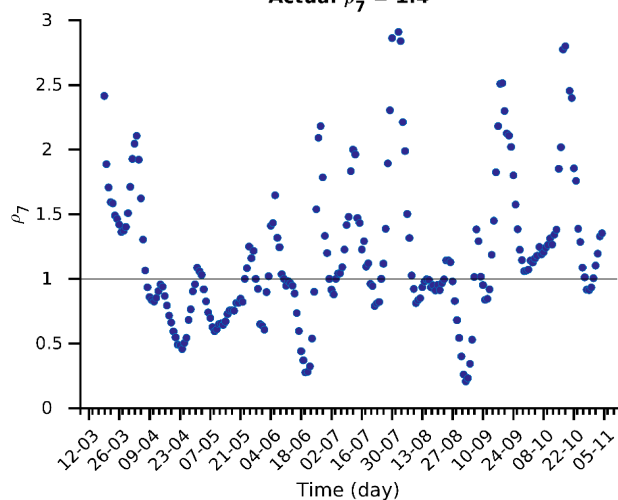
A ₁₄	EPG	CFR
180	244	0.49 %



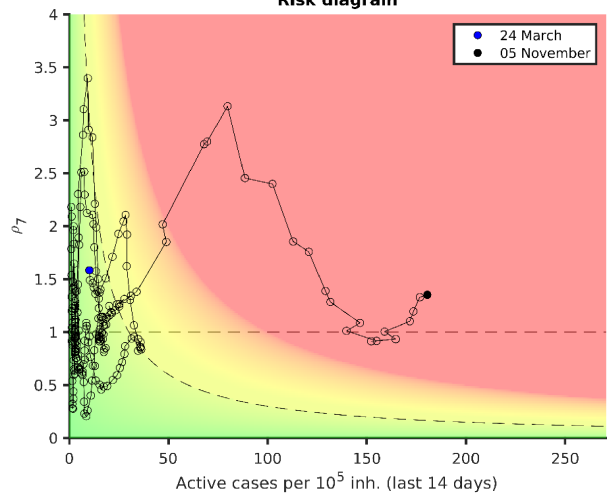
BIOCOM-Cov2 Degree = 9



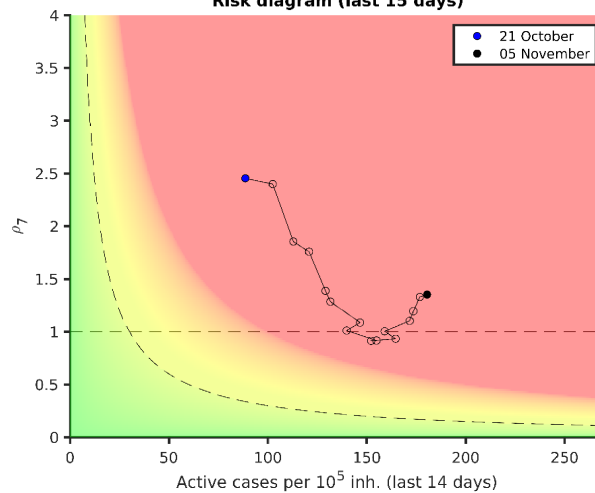
Actual $\rho_7 = 1.4$



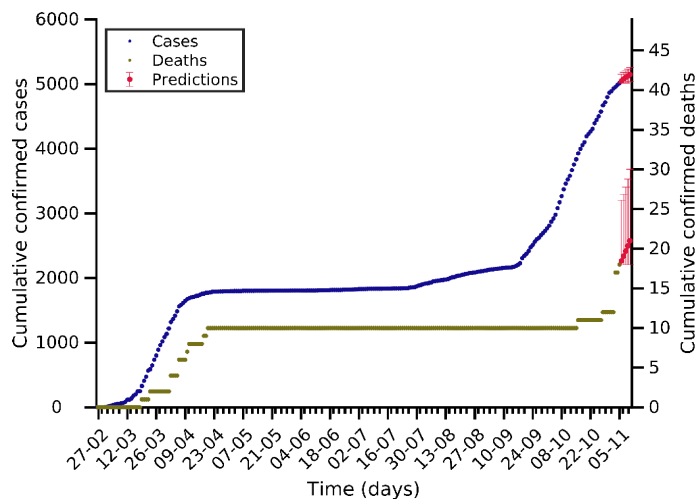
Risk diagram



Risk diagram (last 15 days)



Iceland 05-11-2020. Pop: 0.3M. Cumulative incidence: 1470/10⁵

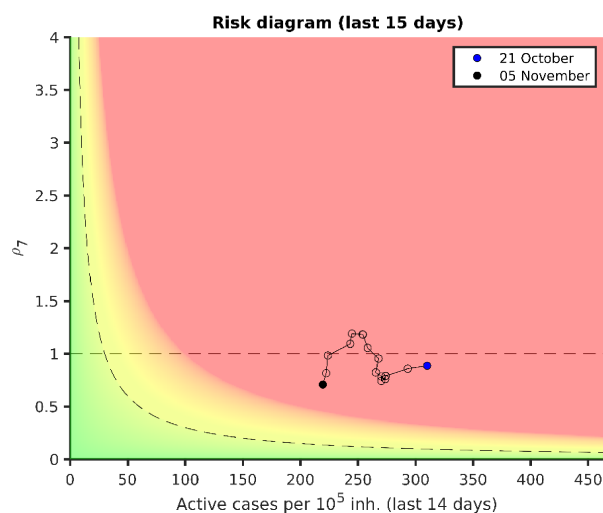
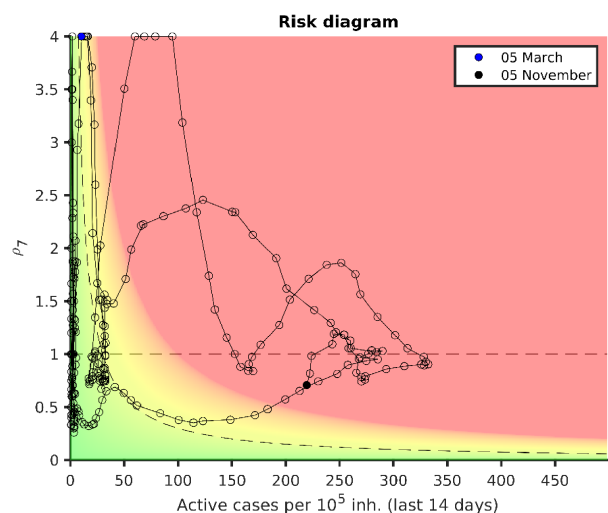
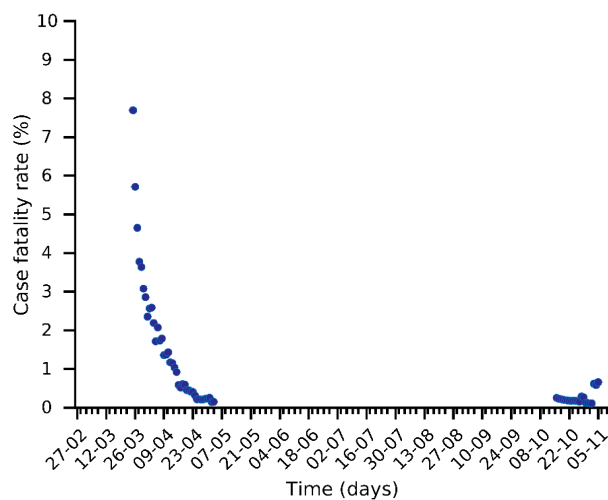
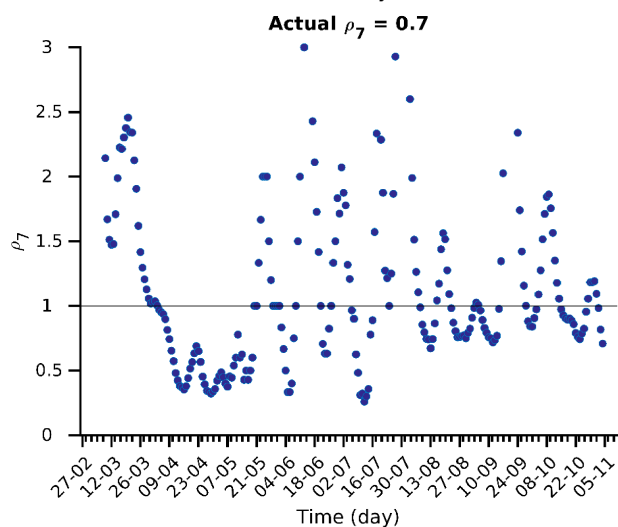
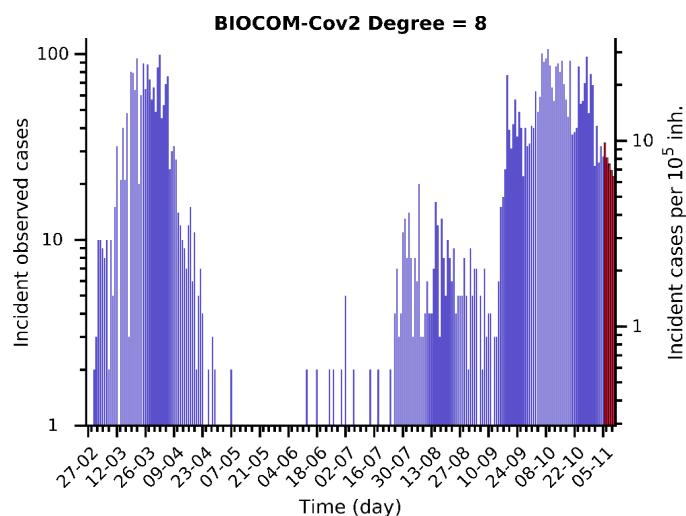
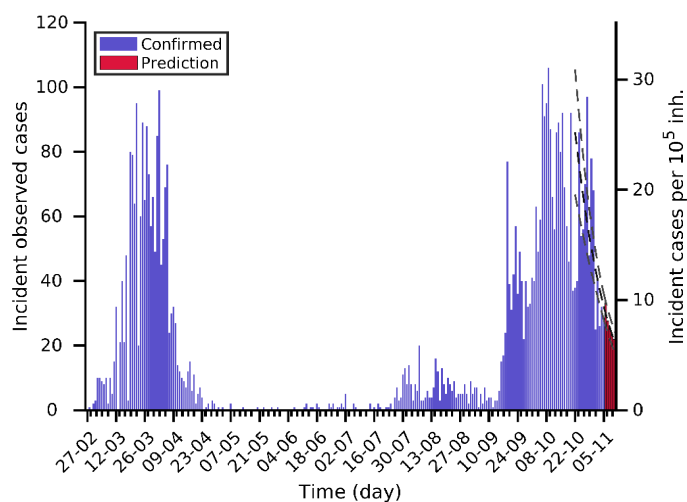


Predictions for next days

Day	Number of cases	95% Confidence Interval
06-11-2020	5050 (+33)	[5017 - 5154]
08-11-2020	5103 (+26)	[5017 - 5209]
10-11-2020	5149 (+22)	[5039 - 5259]

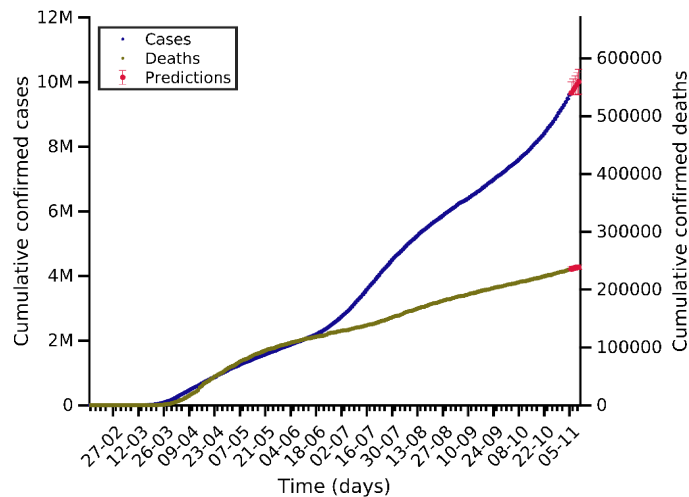
Current indicators

A ₁₄	EPG	CFR
219	155	0.66 %



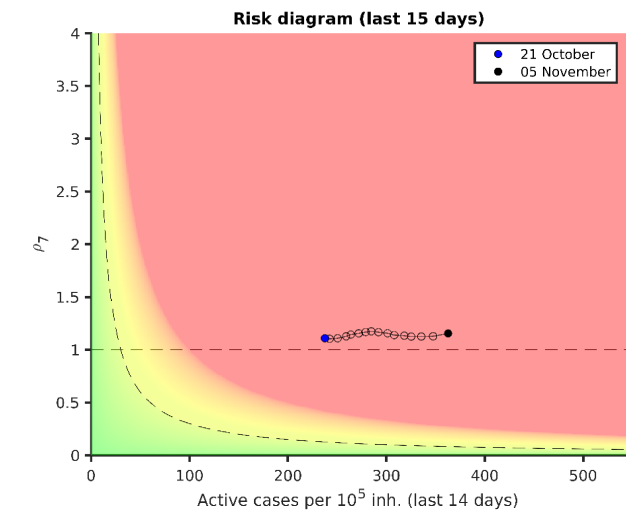
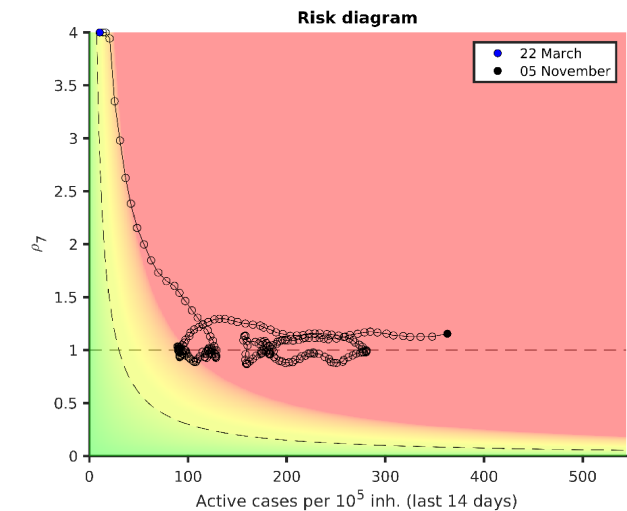
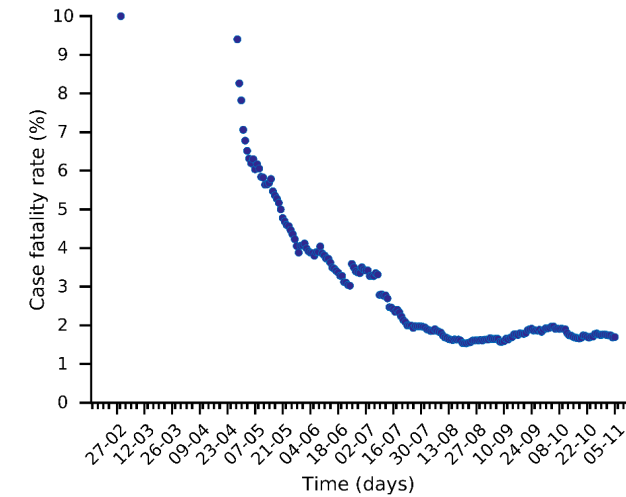
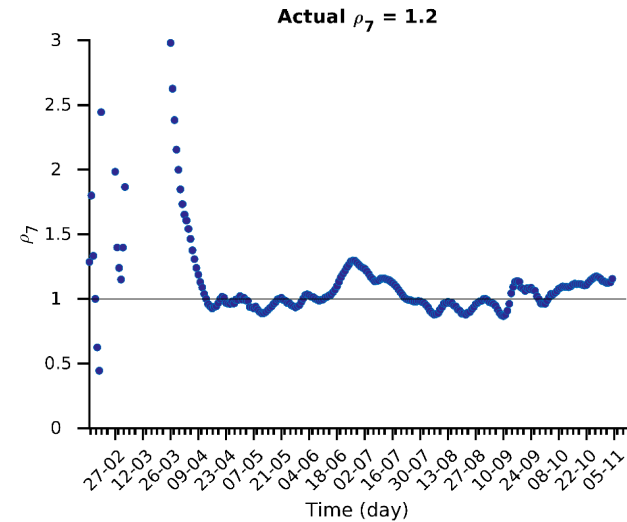
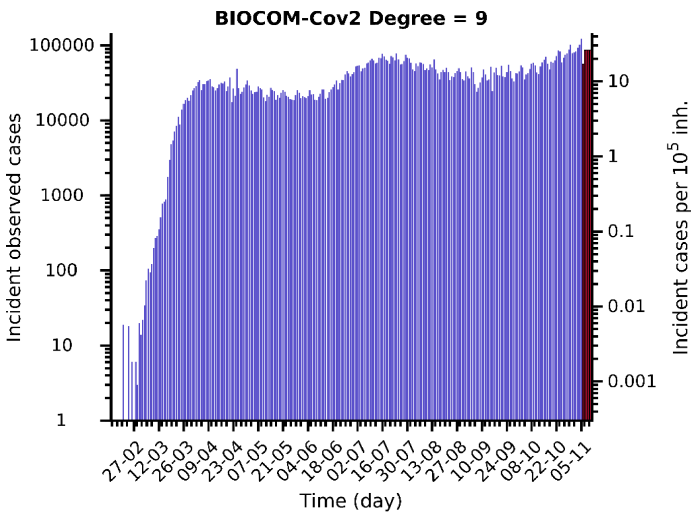
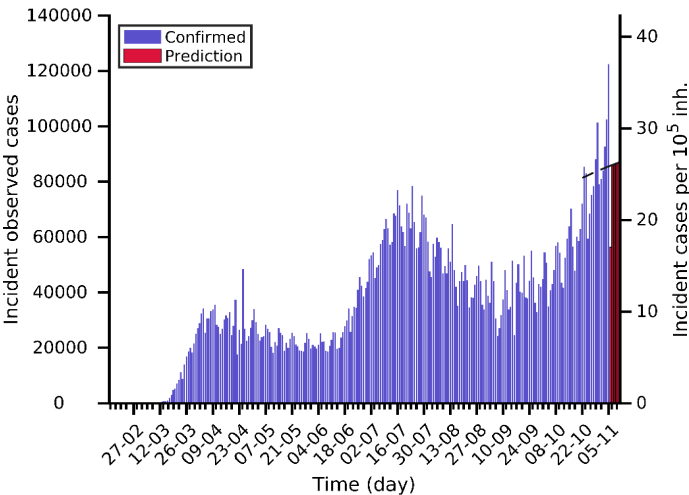
(2) Analysis and prediction of COVID-19 for other countries

USA 05-11-2020. Pop: 331.0M. Cumulative incidence: 2903/10⁵

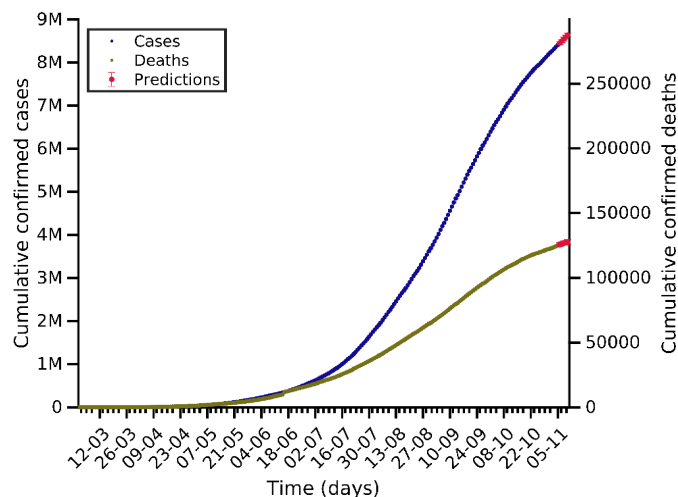


Predictions for next days		
Day	Number of cases	95% Confidence Interval
06-11-2020	9665262 (+56340)	[9608922 - 10006991]
08-11-2020	9837654 (+86328)	[9608922 - 10193344]
10-11-2020	10011086 (+86844)	[9625084 - 10397087]

Current indicators		
A ₁₄	EPG	CFR
363	419	1.69 %



India 05-11-2020. Pop: 1353.0M. Cumulative incidence: 622/10⁵

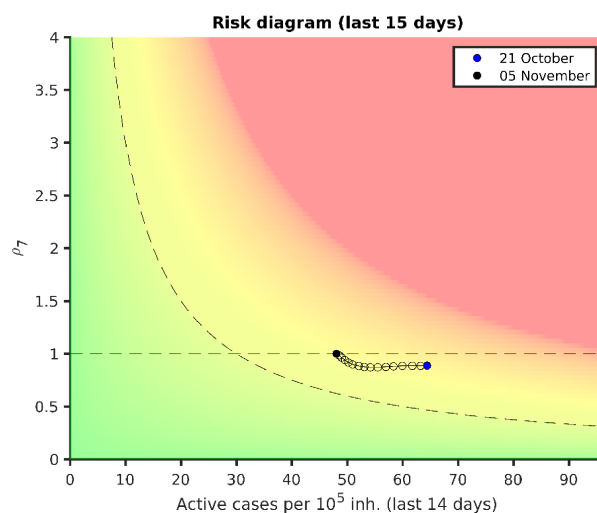
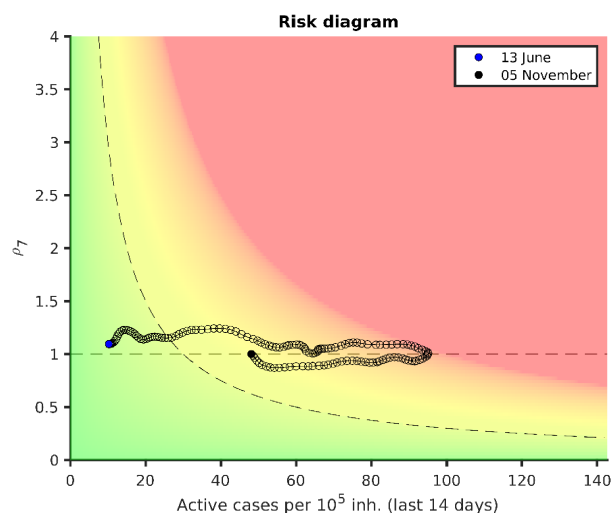
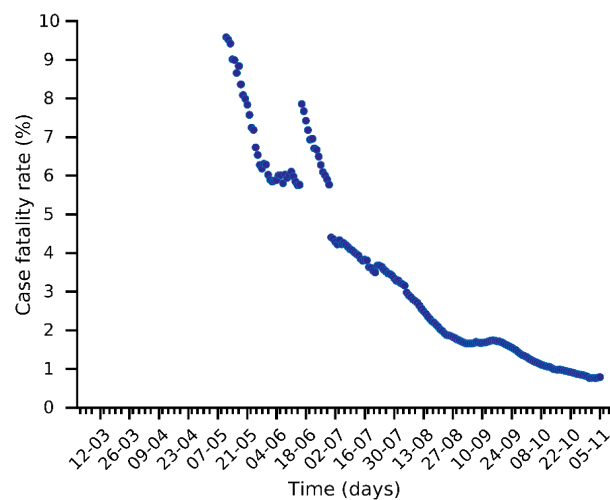
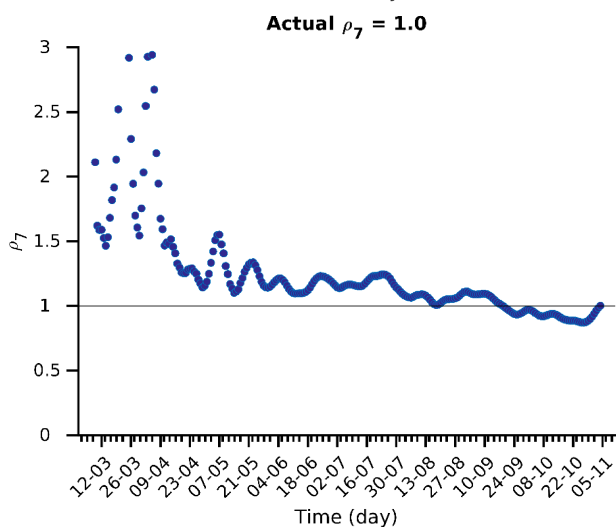
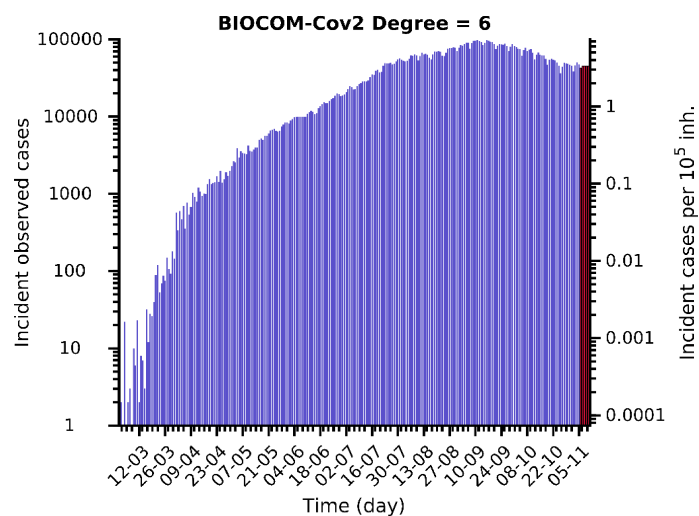
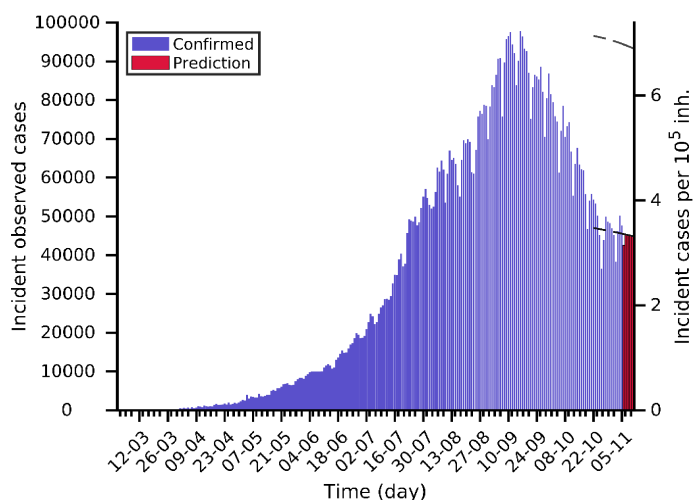


Predictions for next days

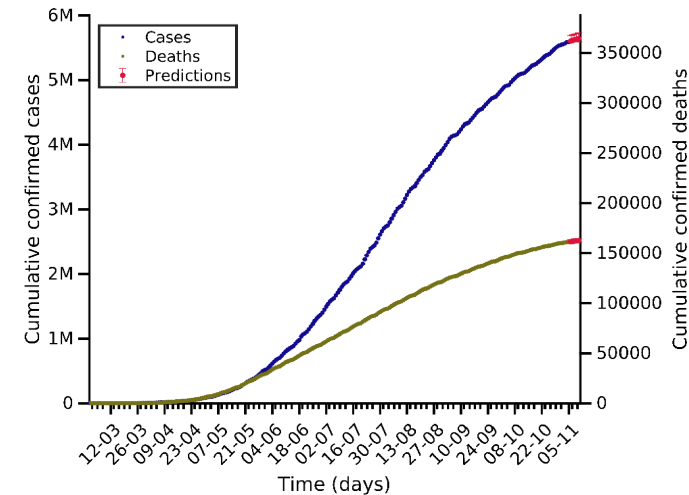
Day	Number of cases	95% Confidence Interval
06-11-2020	8454306 (+42582)	[8411724 - 8497422]
08-11-2020	8544778 (+45175)	[8499999 - 8589557]
10-11-2020	8634754 (+44925)	[8586446 - 8683063]

Current indicators

A ₁₄	EPG	CFR
48	48	0.79 %

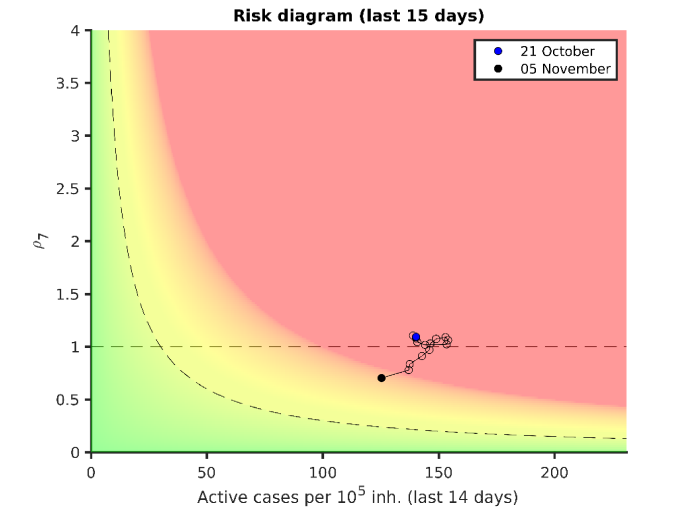
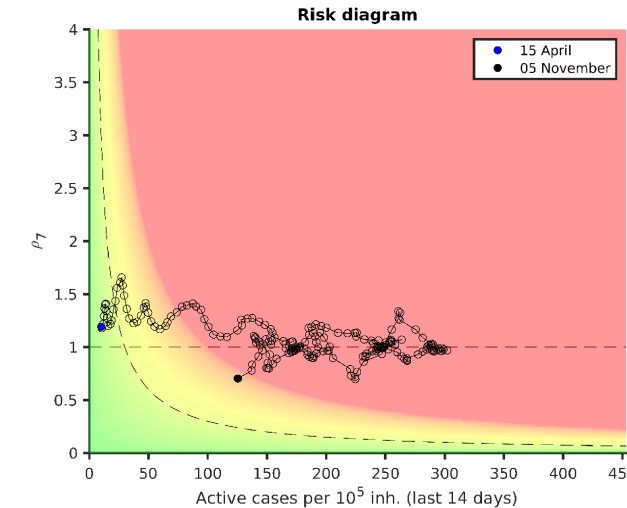
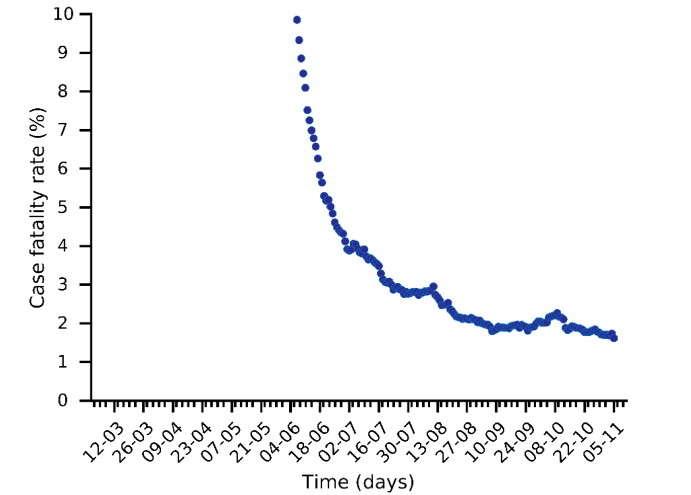
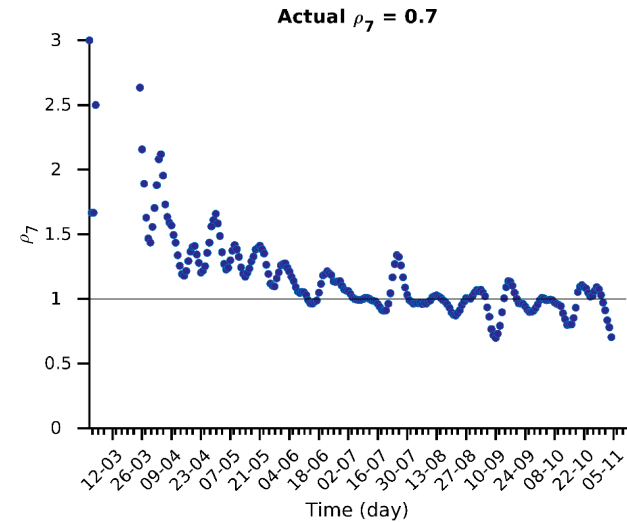
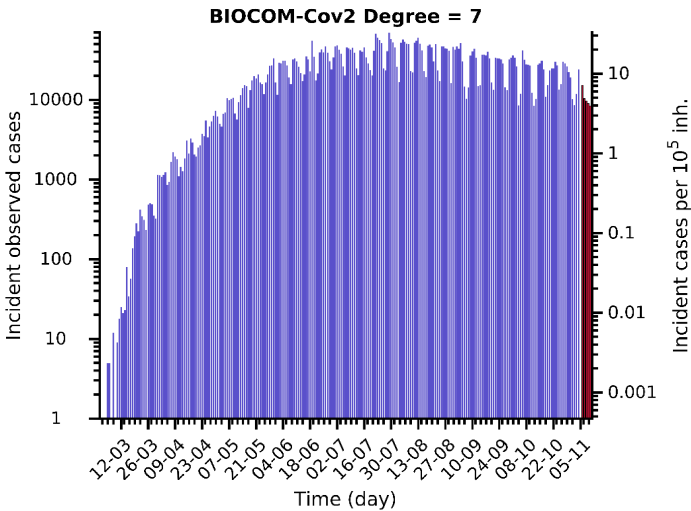
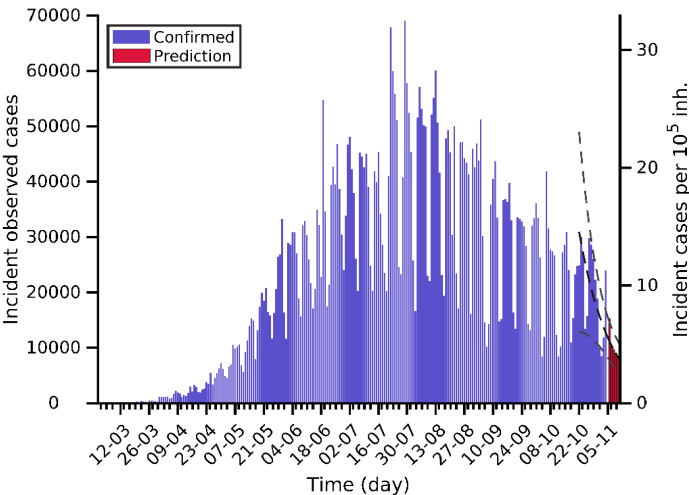


Brazil 05-11-2020. Pop: 212.6M. Cumulative incidence: 2630/10⁵

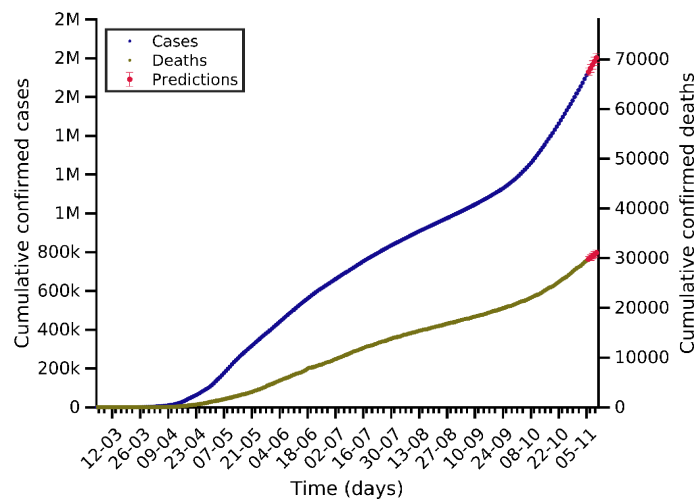


Predictions for next days		
Day	Number of cases	95% Confidence Interval
06-11-2020	5605263 (+15238)	[5590025 - 5688410]
08-11-2020	5625207 (+9621)	[5590025 - 5710189]
10-11-2020	5642530 (+8356)	[5590025 - 5730652]

Current indicators		
A ₁₄	EPG	CFR
125	88	1.62 %



Russia 05-11-2020. Pop: 145.9M. Cumulative incidence: 1174/10⁵

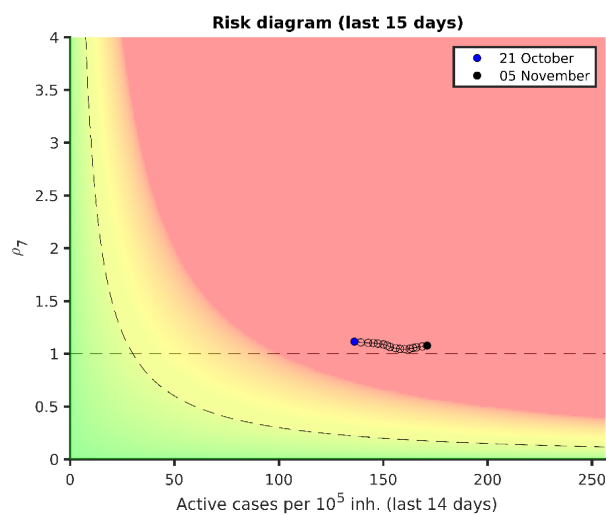
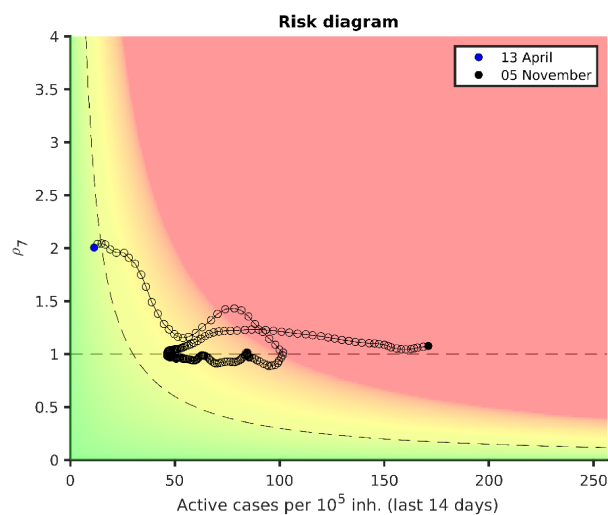
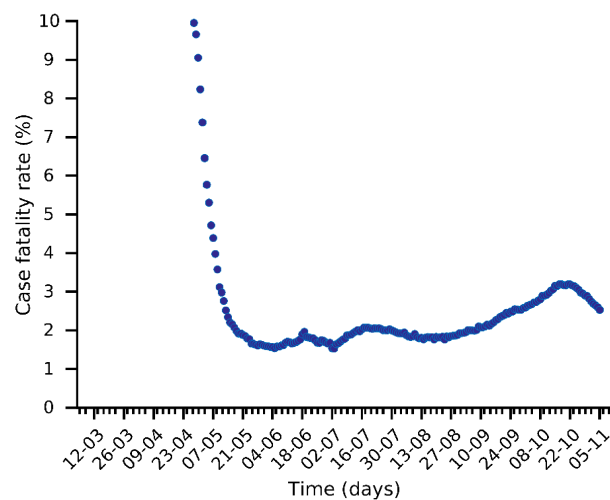
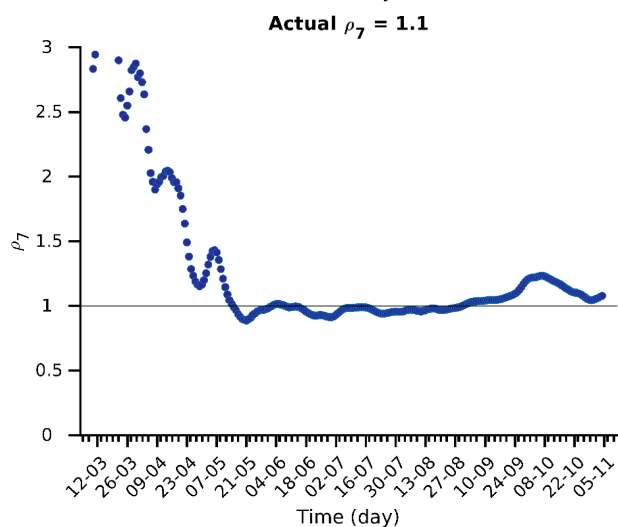
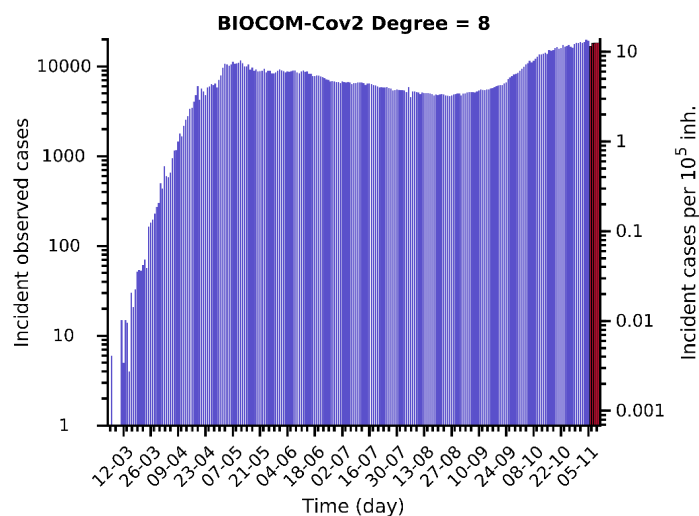
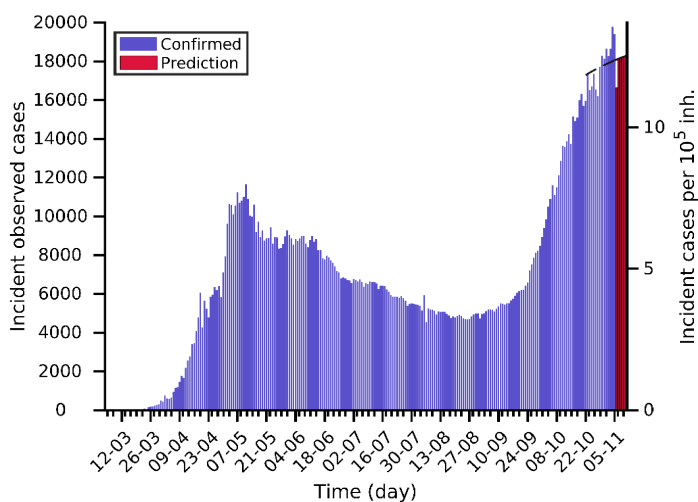


Predictions for next days

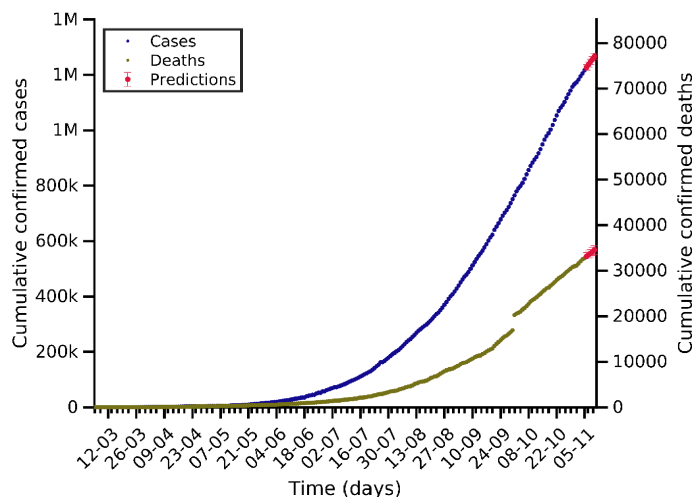
Day	Number of cases	95% Confidence Interval
06-11-2020	1729488 (+16630)	[1712858 - 1749835]
08-11-2020	1765806 (+18180)	[1744627 - 1786986]
10-11-2020	1802283 (+18257)	[1779298 - 1825268]

Current indicators

A ₁₄	EPG	CFR
171	184	2.53 %



Argentina 05-11-2020. Pop: 45.2M. Cumulative incidence: 2693/10⁵

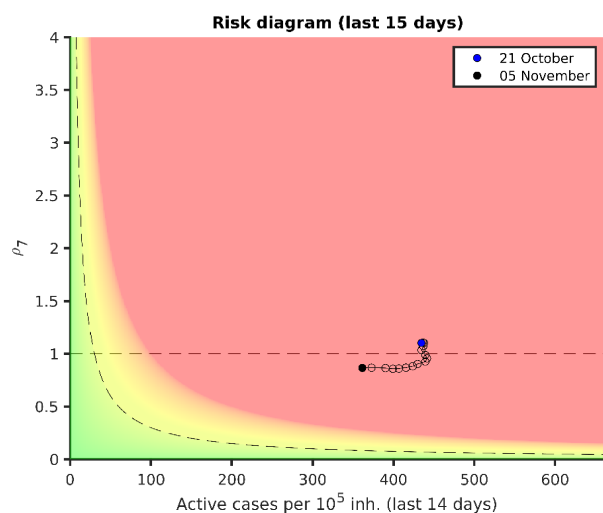
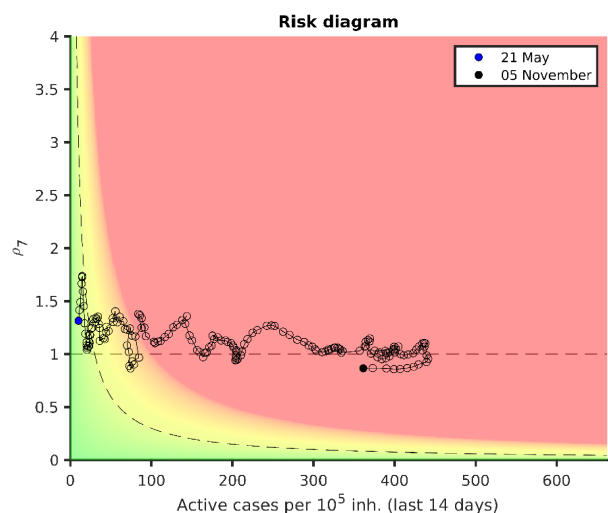
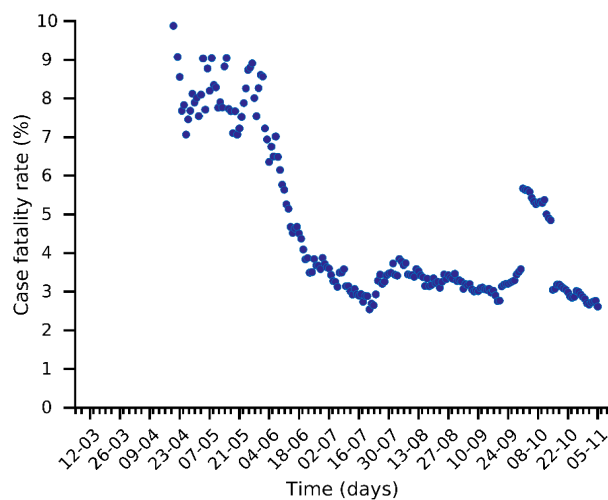
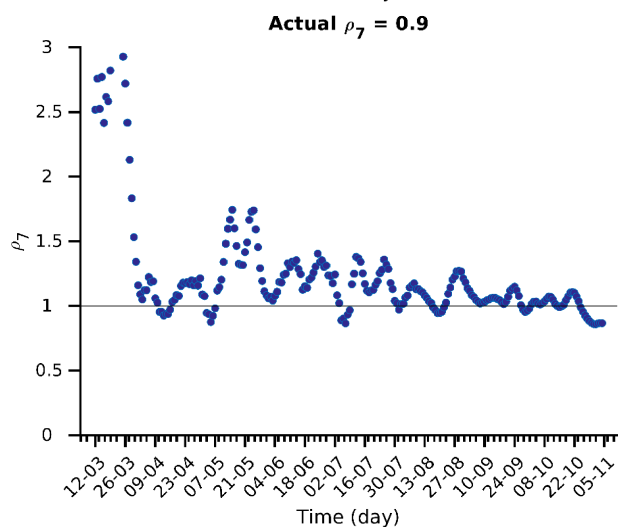
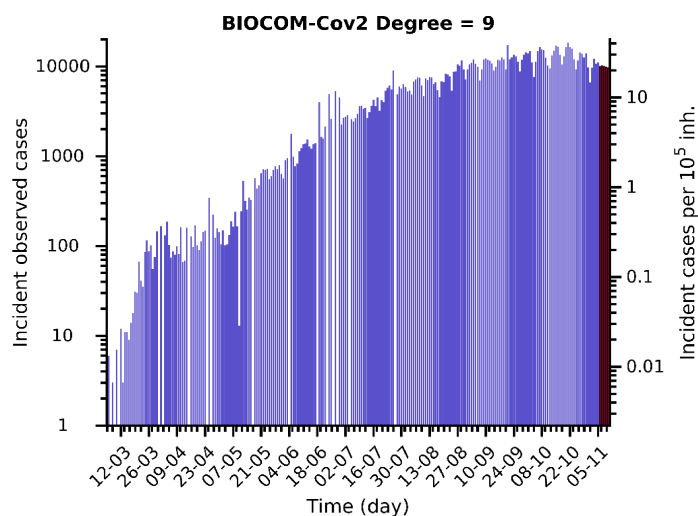
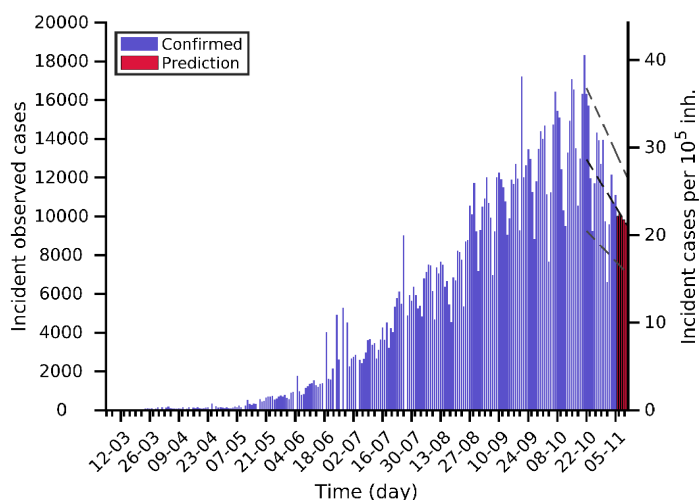


Predictions for next days

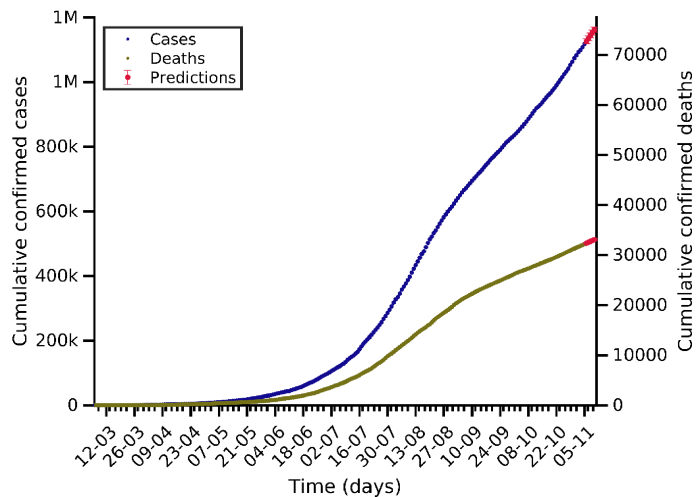
Day	Number of cases	95% Confidence Interval
06-11-2020	1227020 (+10005)	[1217644 - 1236395]
08-11-2020	1247180 (+9994)	[1237475 - 1256886]
10-11-2020	1266657 (+9653)	[1256280 - 1277033]

Current indicators

A ₁₄	EPG	CFR
361	313	2.61 %



Colombia 05-11-2020. Pop: 50.9M. Cumulative incidence: 2197/10⁵

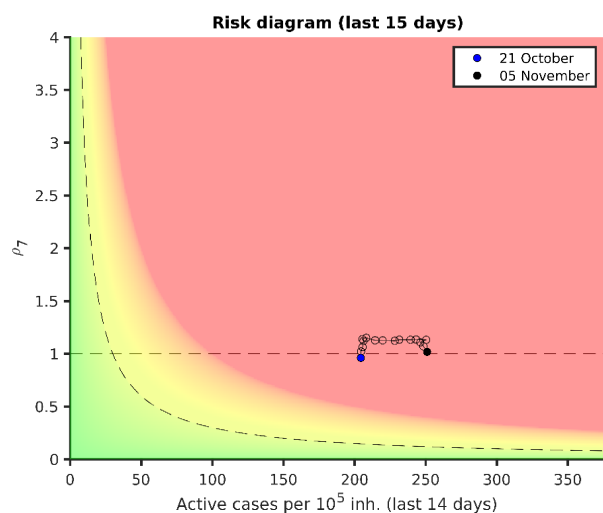
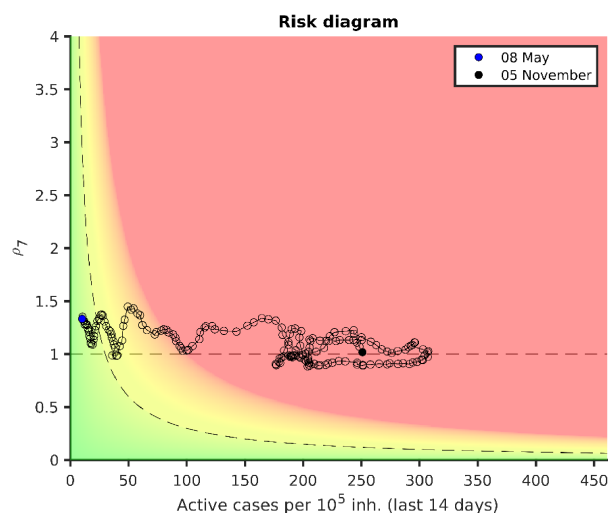
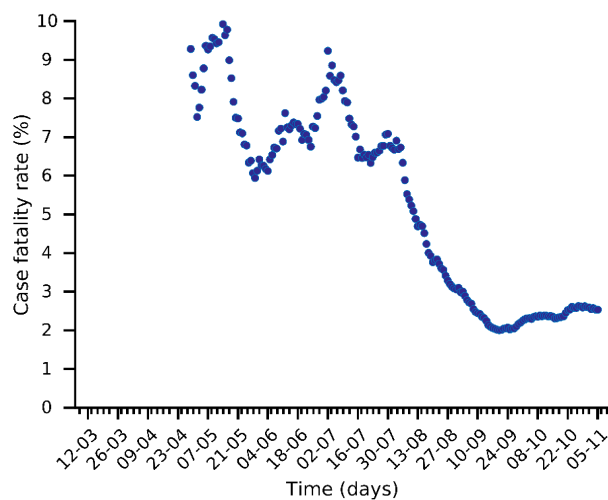
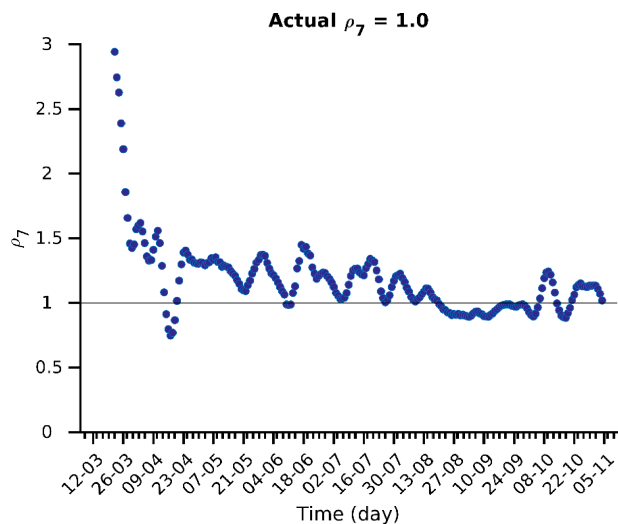
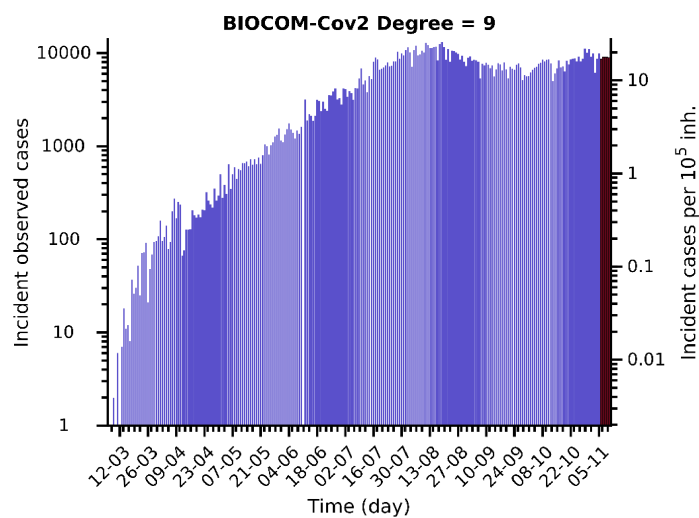
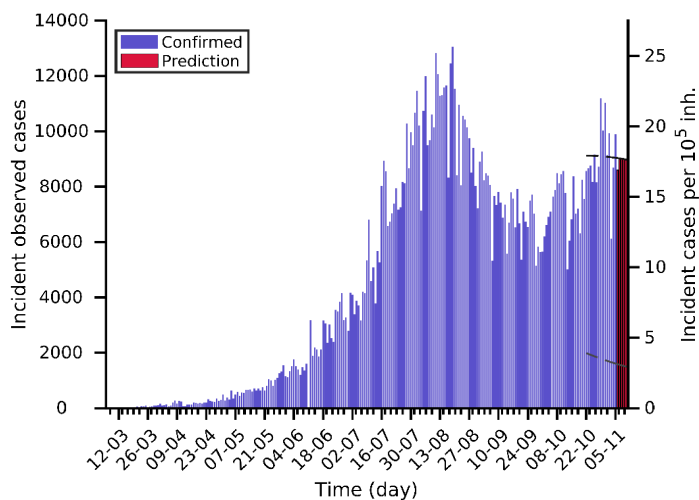


Predictions for next days

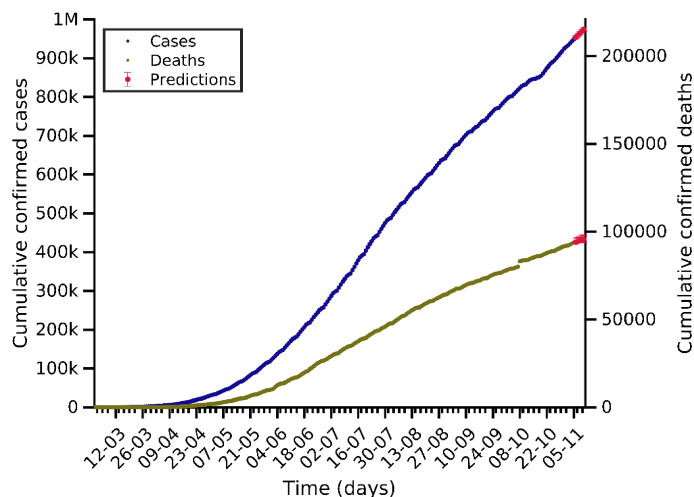
Day	Number of cases	95% Confidence Interval
06-11-2020	1126574 (+8597)	[1119203 - 1133944]
08-11-2020	1144604 (+9009)	[1136943 - 1152264]
10-11-2020	1162583 (+8983)	[1154301 - 1170865]

Current indicators

A ₁₄	EPG	CFR
251	256	2.53 %



Mexico 05-11-2020. Pop: 128.9M. Cumulative incidence: 736/10⁵

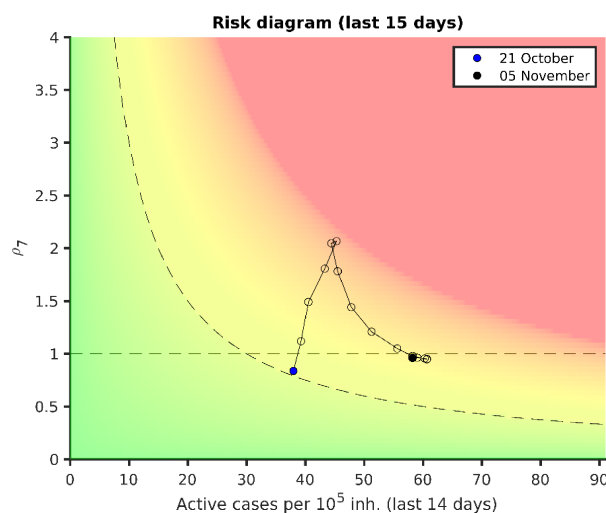
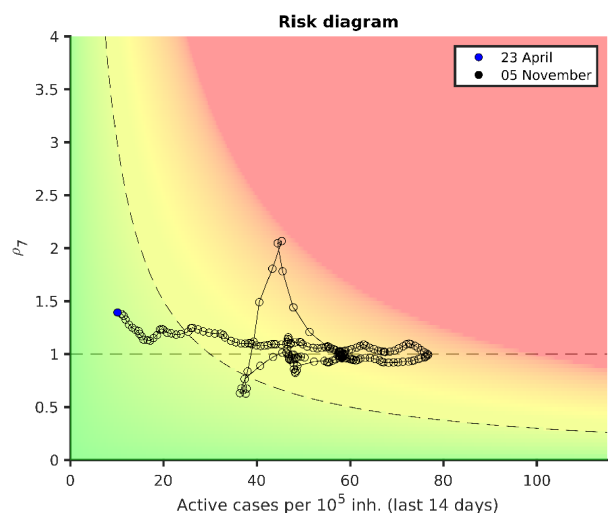
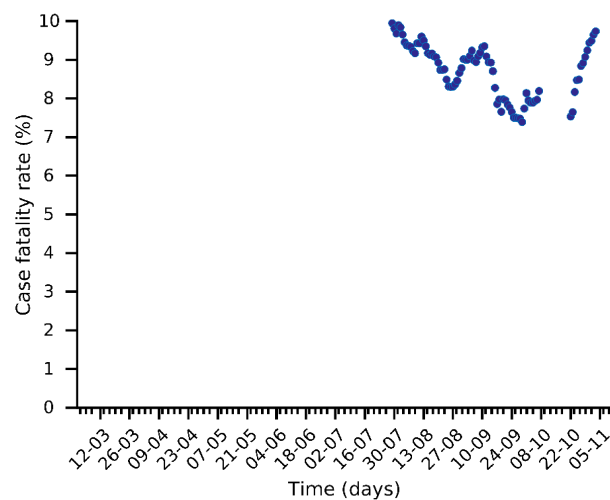
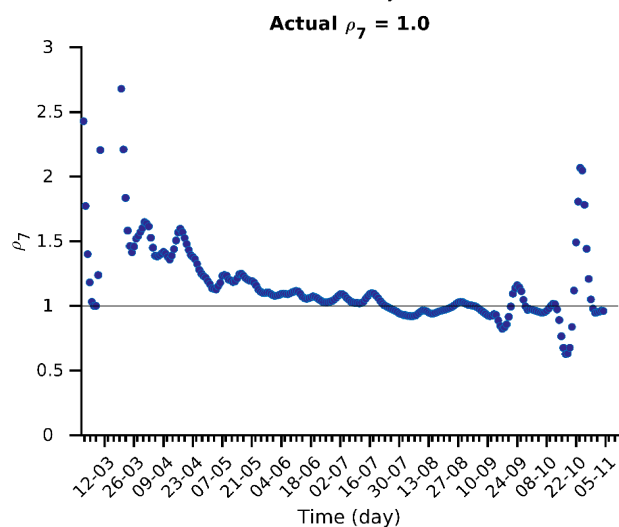
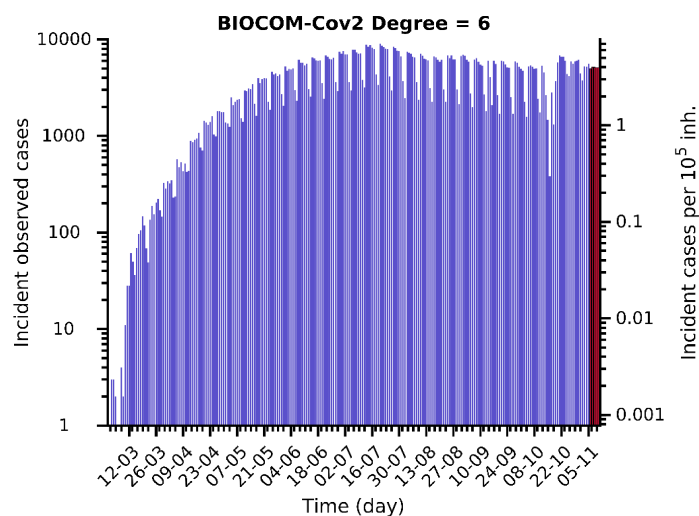
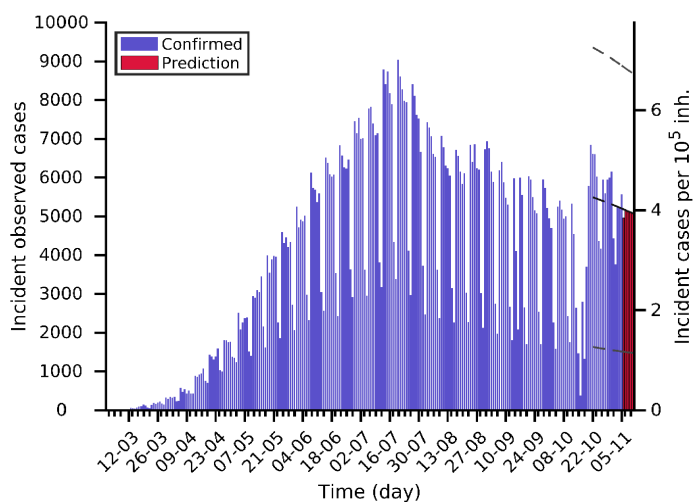


Predictions for next days

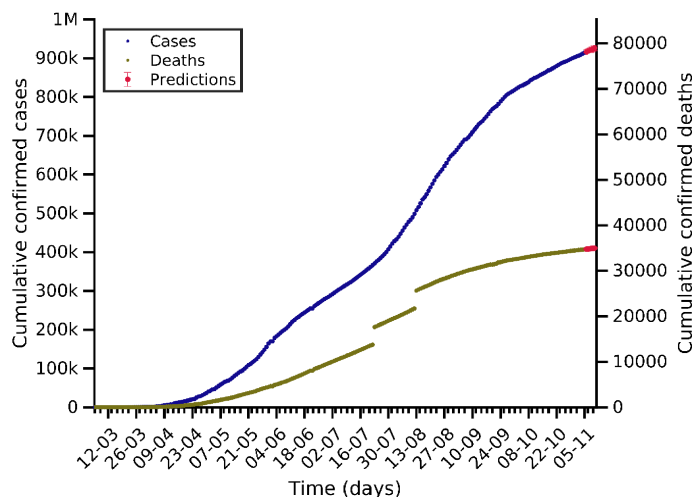
Day	Number of cases	95% Confidence Interval
06-11-2020	954153 (+4956)	[950086 - 958220]
08-11-2020	964444 (+5134)	[960223 - 968666]
10-11-2020	974643 (+5088)	[970094 - 979192]

Current indicators

A ₁₄	EPG	CFR
58	56	10.00 %



Peru 05-11-2020. Pop: 33.0M. Cumulative incidence: 2774/10⁵

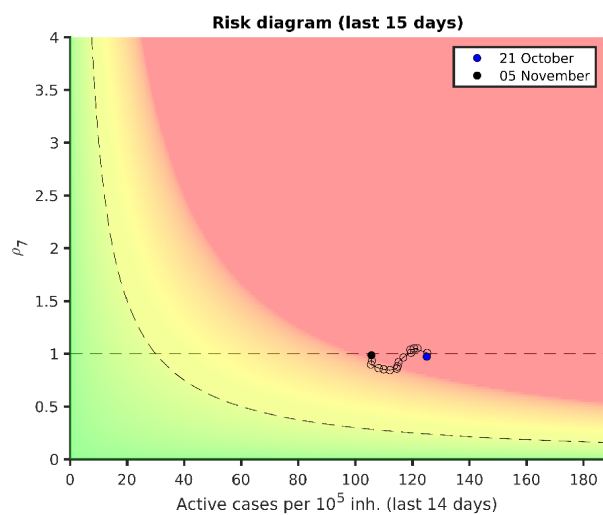
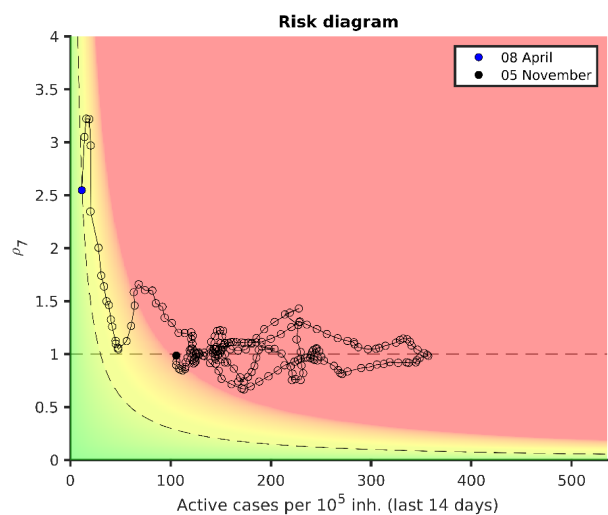
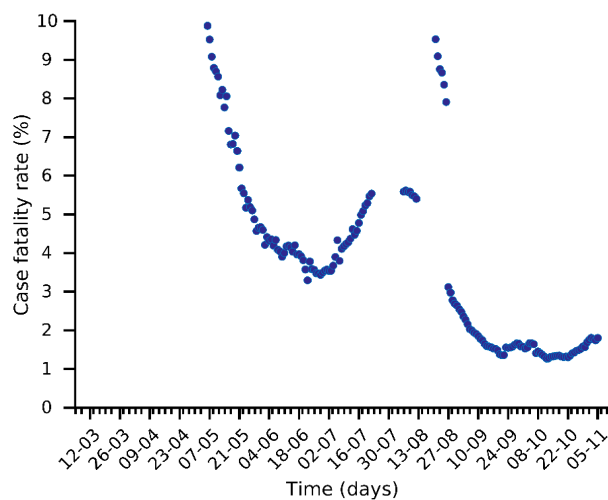
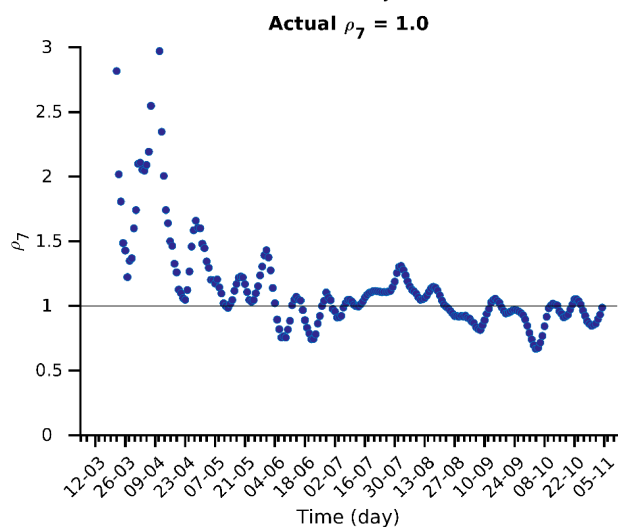
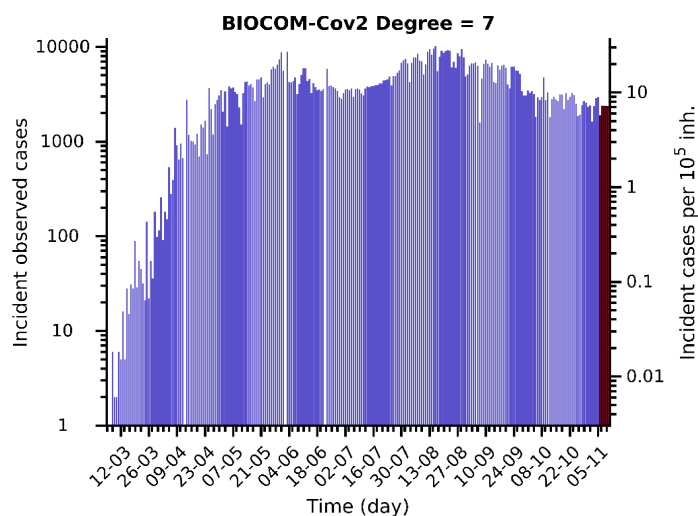
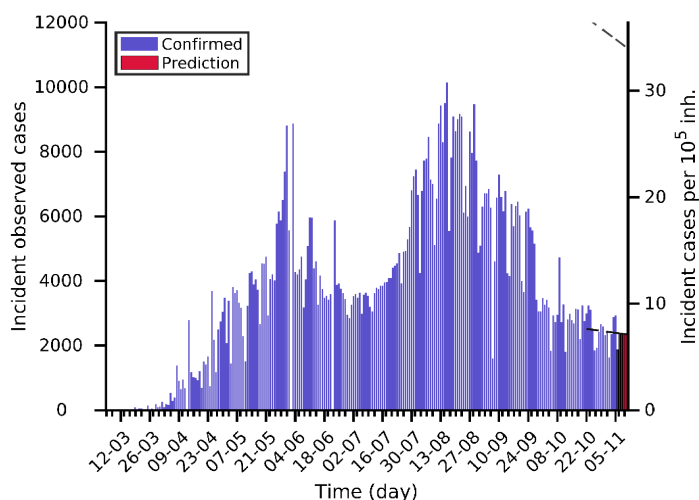


Predictions for next days

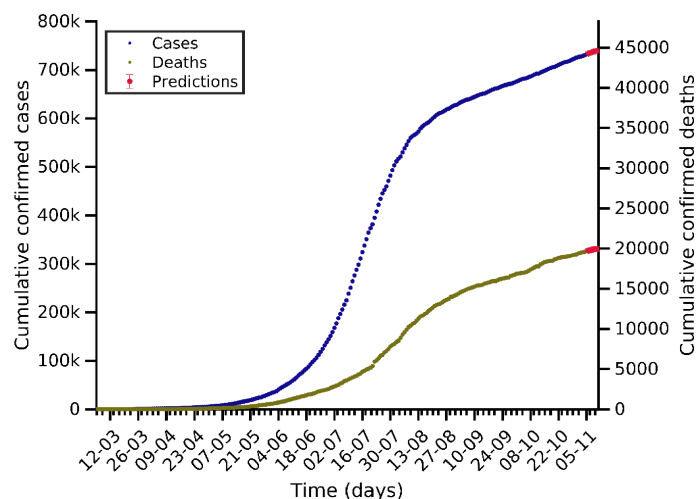
Day	Number of cases	95% Confidence Interval
06-11-2020	916591 (+1869)	[914722 - 923004]
08-11-2020	921337 (+2369)	[914722 - 927993]
10-11-2020	926048 (+2351)	[918881 - 933215]

Current indicators

A ₁₄	EPG	CFR
106	104	1.80 %



South Africa 05-11-2020. Pop: 59.3M. Cumulative incidence: 1235/10⁵

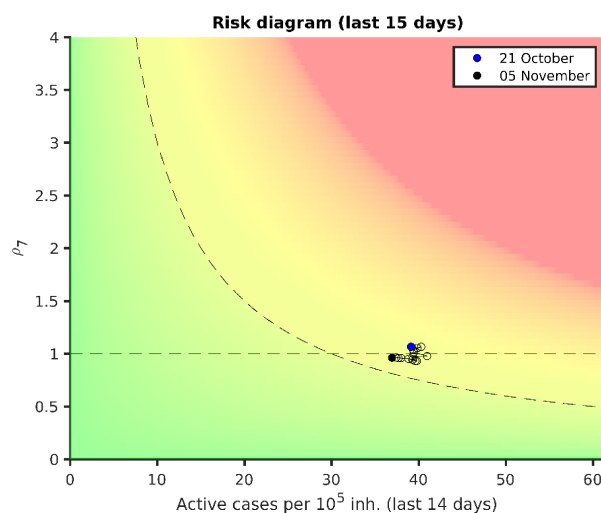
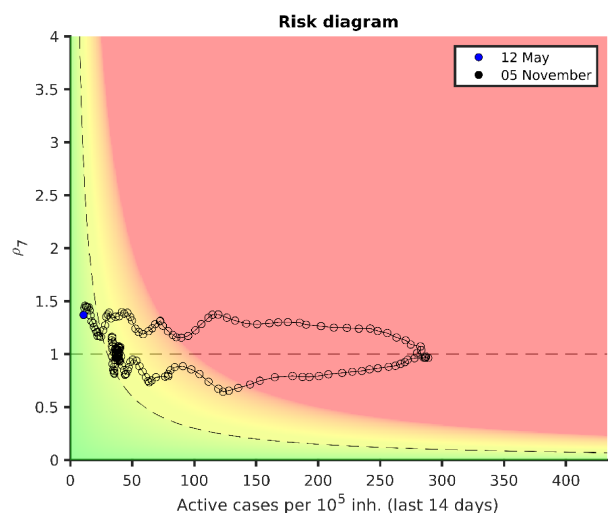
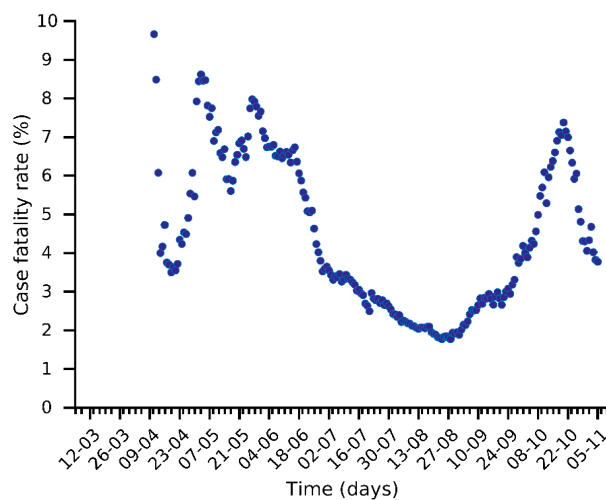
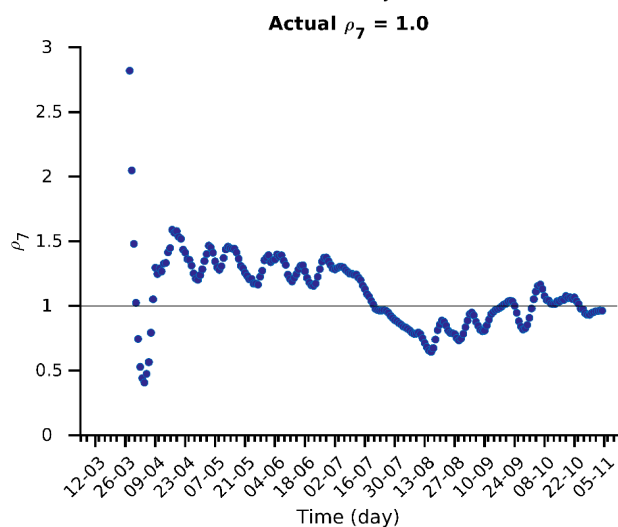
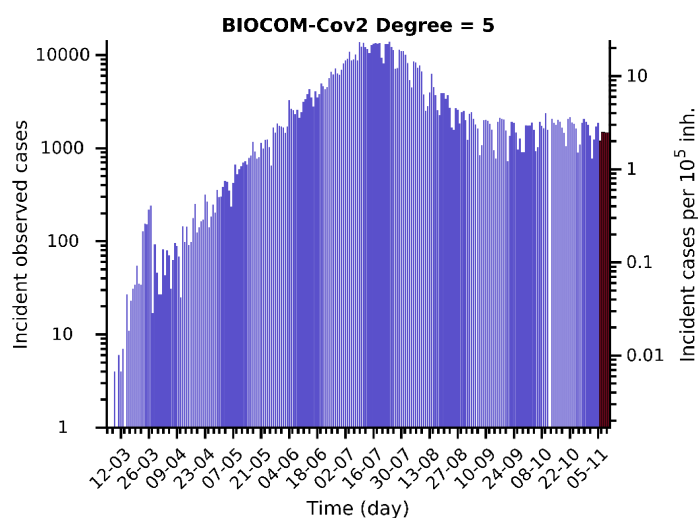
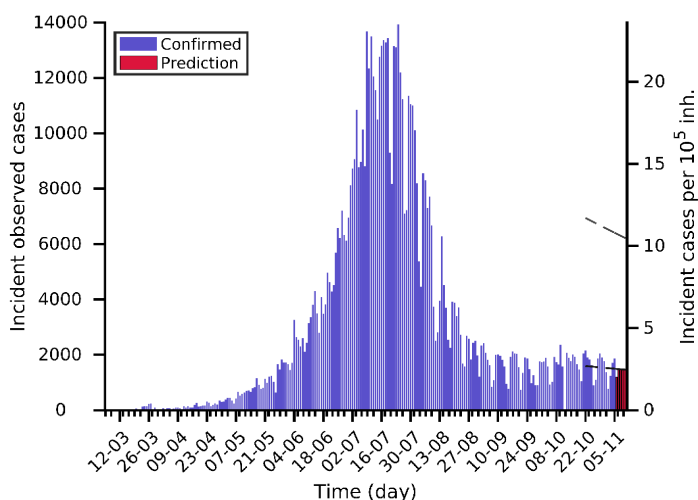


Predictions for next days

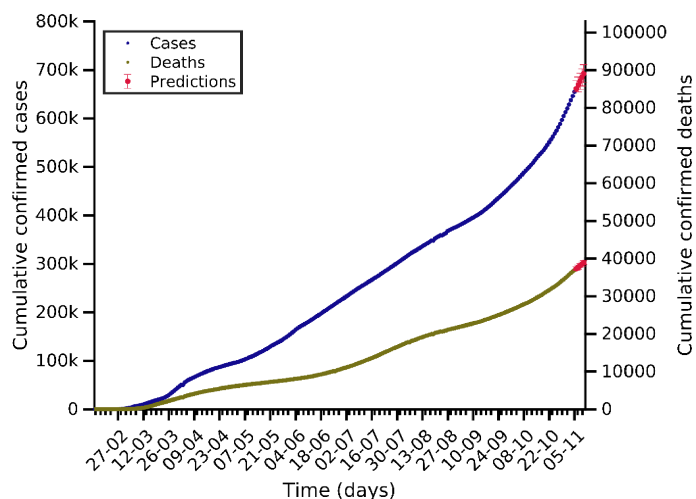
Day	Number of cases	95% Confidence Interval
06-11-2020	733607 (+1193)	[732414 - 737403]
08-11-2020	736565 (+1475)	[732627 - 740503]
10-11-2020	739494 (+1461)	[735258 - 743730]

Current indicators

A ₁₄	EPG	CFR
37	36	3.77 %



Iran 05-11-2020. Pop: 84.0M. Cumulative incidence: 780/10⁵

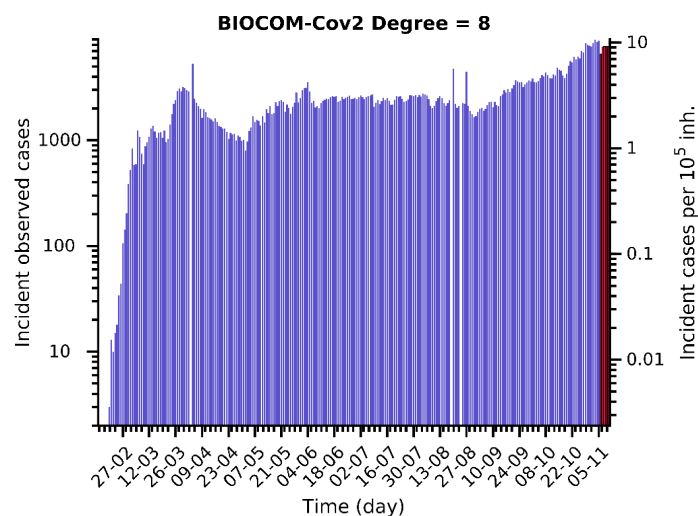
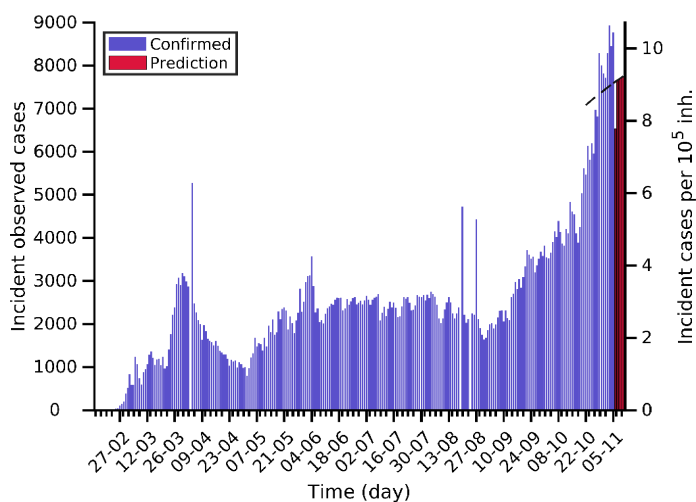


Predictions for next days

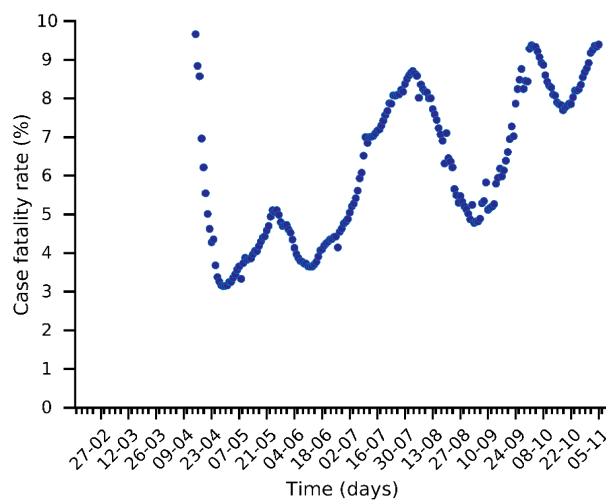
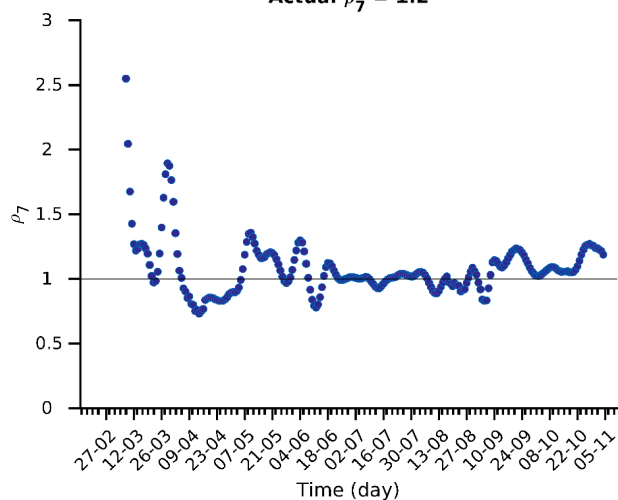
Day	Number of cases	95% Confidence Interval
06-11-2020	661469 (+6533)	[654936 - 677761]
08-11-2020	676814 (+7689)	[659844 - 693784]
10-11-2020	692284 (+7750)	[673831 - 710737]

Current indicators

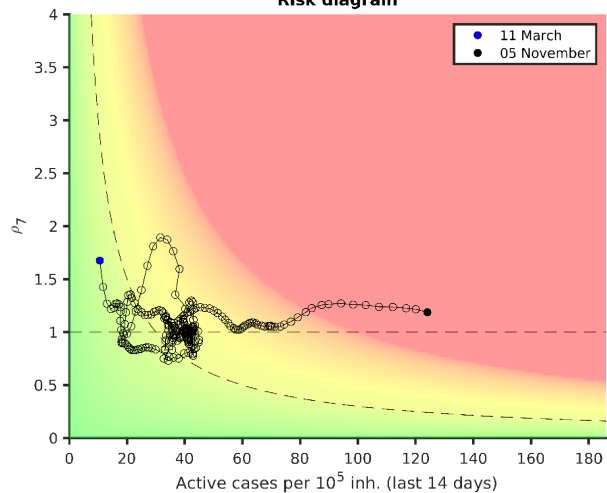
A ₁₄	EPG	CFR
124	147	9.39 %



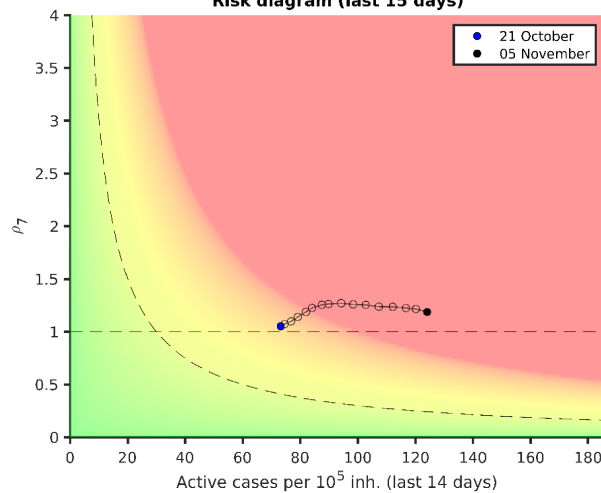
Actual $\rho_7 = 1.2$



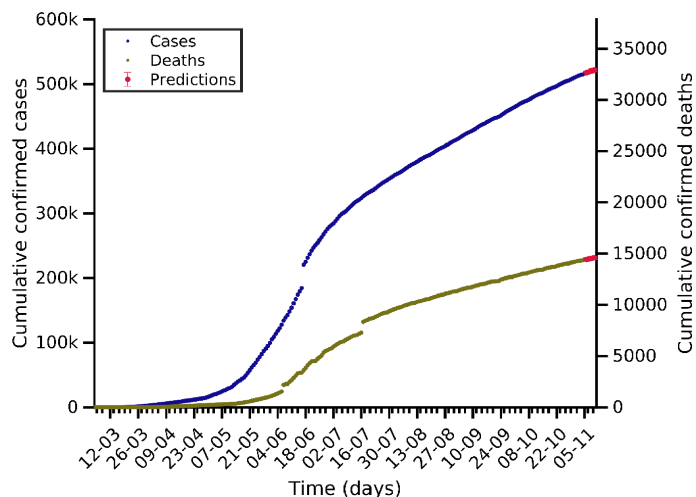
Risk diagram



Risk diagram (last 15 days)



Chile 05-11-2020. Pop: 19.1M. Cumulative incidence: 2702/10⁵

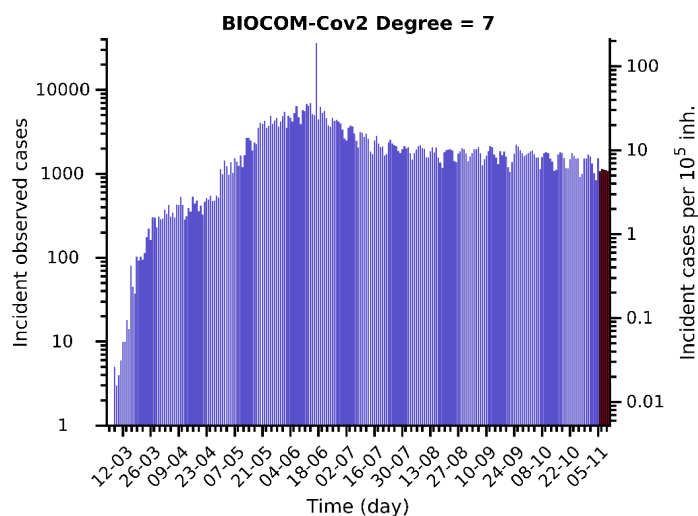
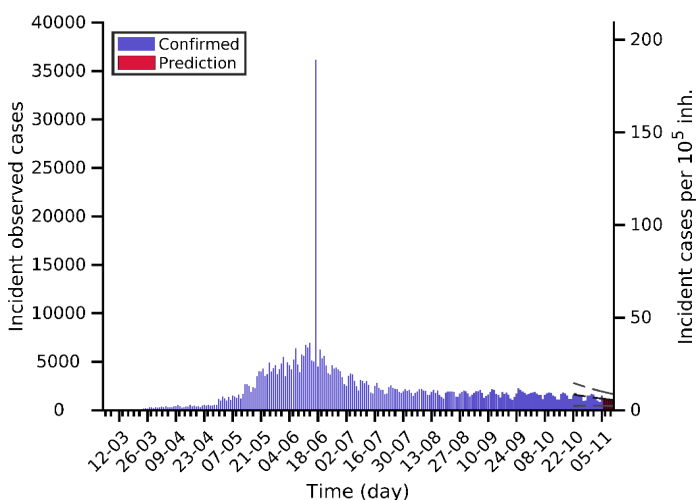


Predictions for next days

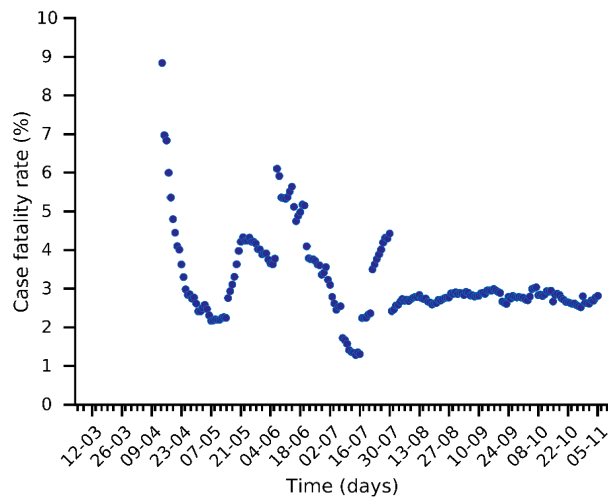
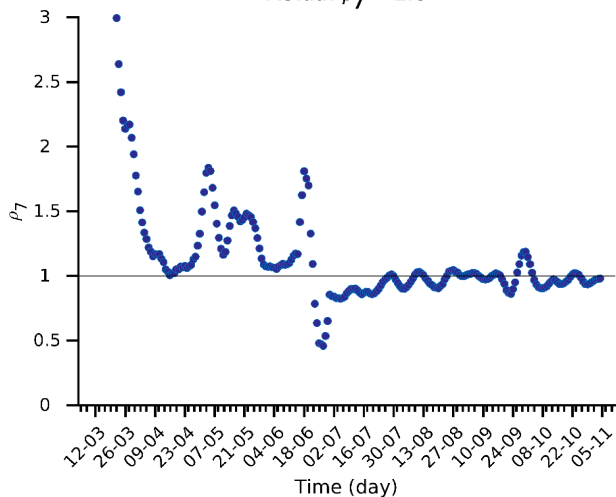
Day	Number of cases	95% Confidence Interval
06-11-2020	517643 (+1061)	[516582 - 520336]
08-11-2020	519900 (+1116)	[517119 - 522681]
10-11-2020	522057 (+1067)	[519101 - 525013]

Current indicators

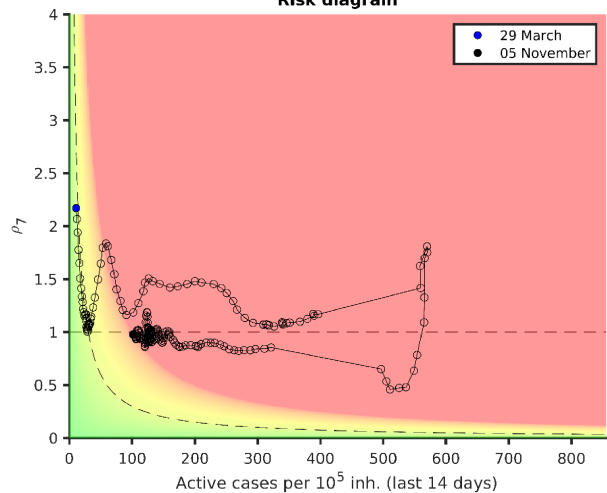
A ₁₄	EPG	CFR
102	100	2.81 %



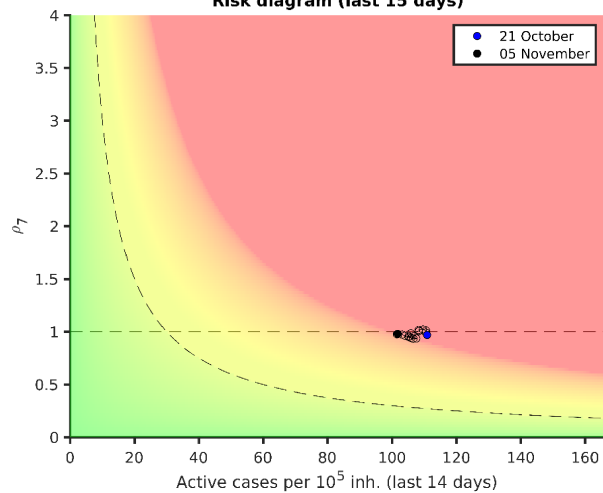
Actual $\rho_7 = 1.0$



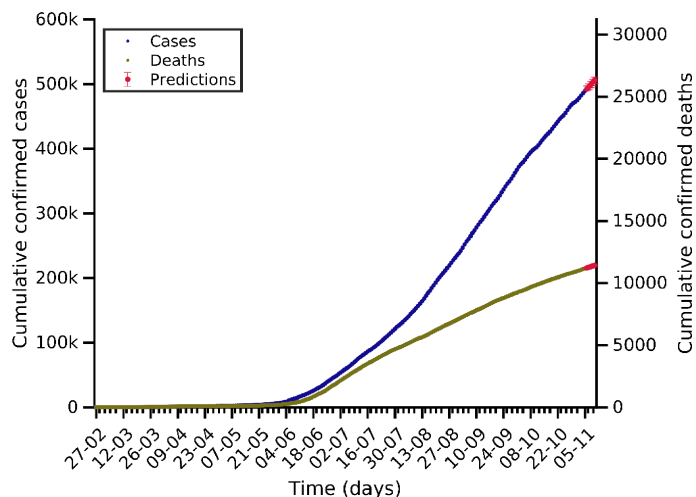
Risk diagram



Risk diagram (last 15 days)



Iraq 05-11-2020. Pop: 40.2M. Cumulative incidence: 1217/10⁵

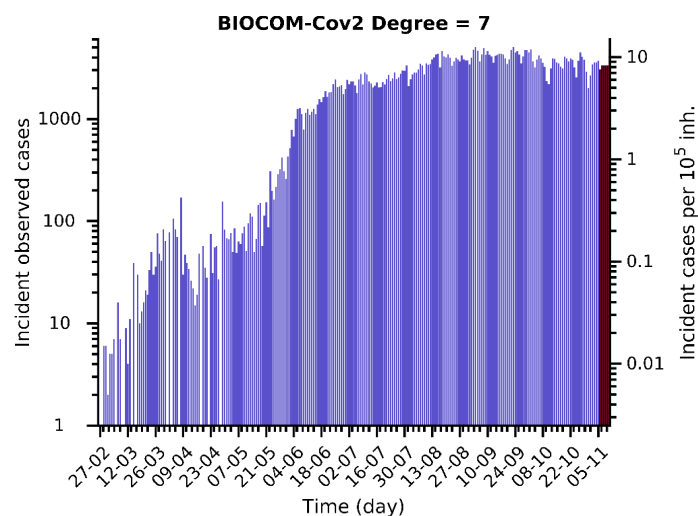
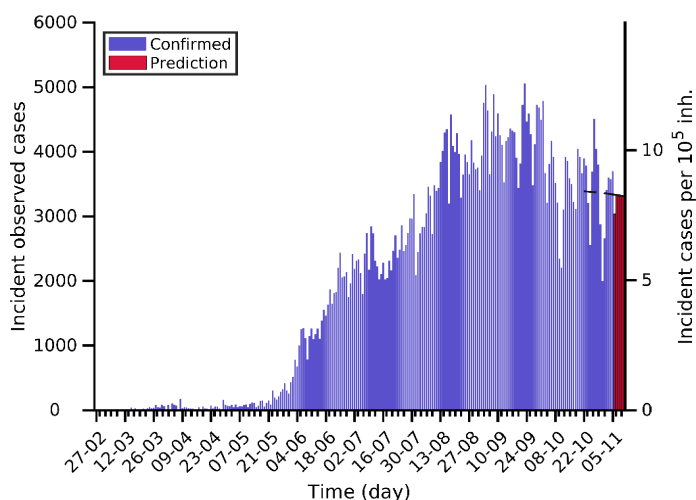


Predictions for next days

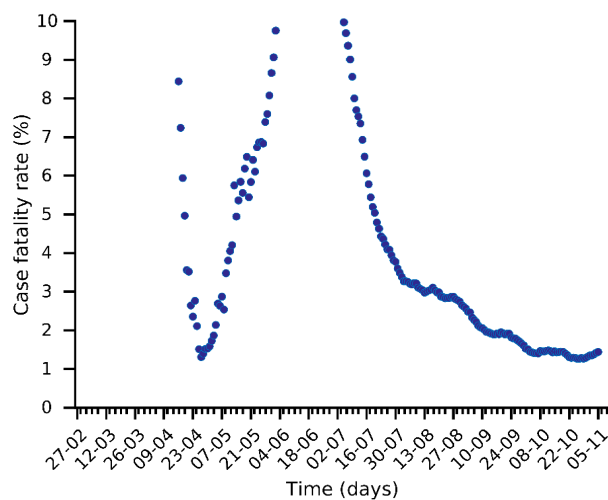
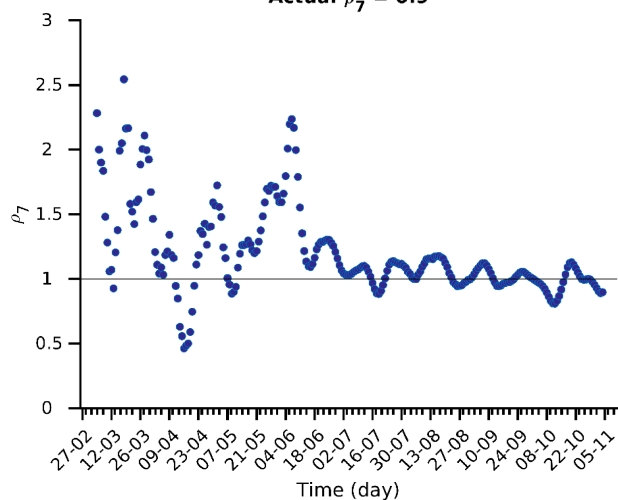
Day	Number of cases	95% Confidence Interval
06-11-2020	492606 (+3035)	[489571 - 497085]
08-11-2020	499262 (+3325)	[494608 - 503916]
10-11-2020	505897 (+3315)	[500868 - 510925]

Current indicators

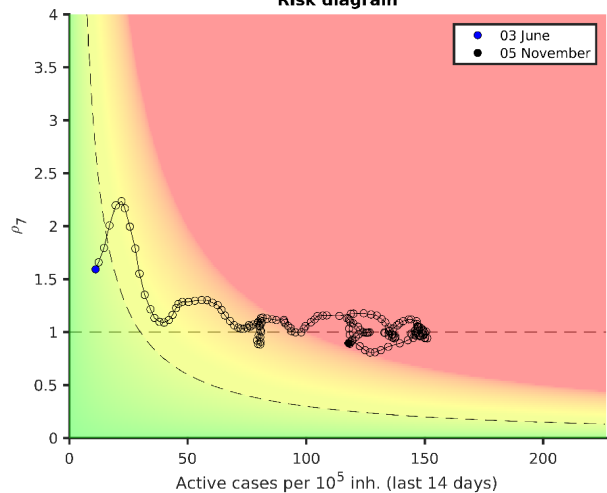
A ₁₄	EPG	CFR
118	106	1.44 %



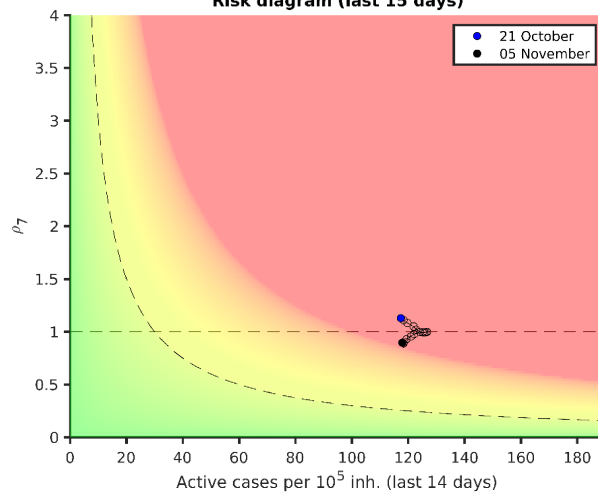
Actual $\rho_7 = 0.9$



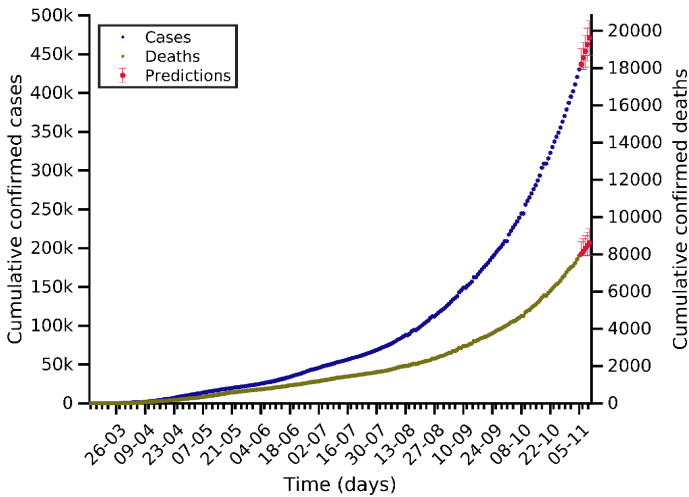
Risk diagram



Risk diagram (last 15 days)

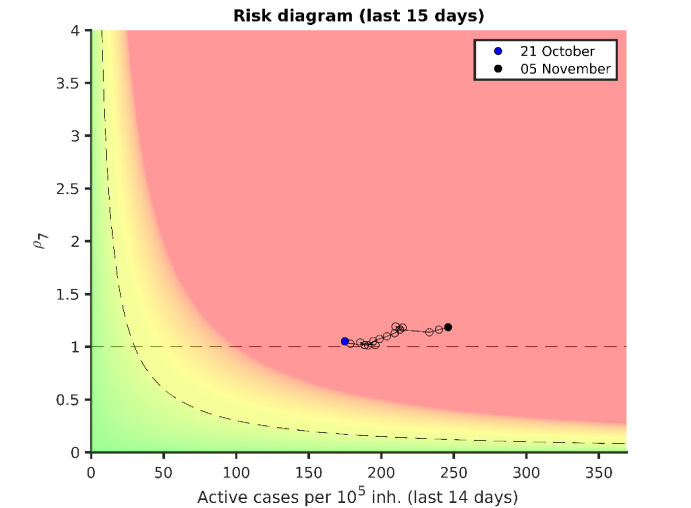
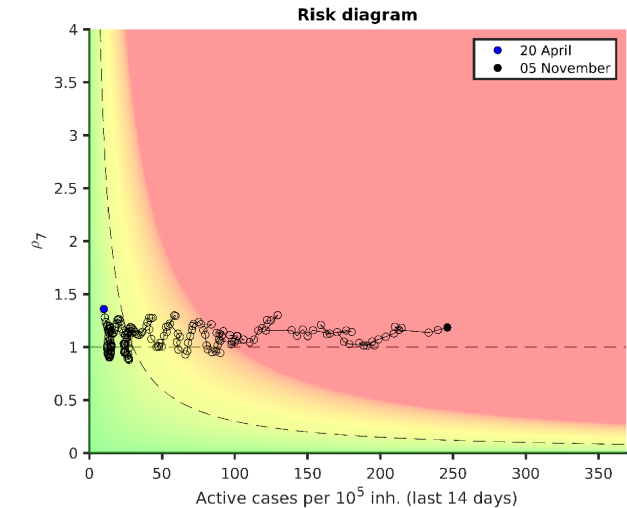
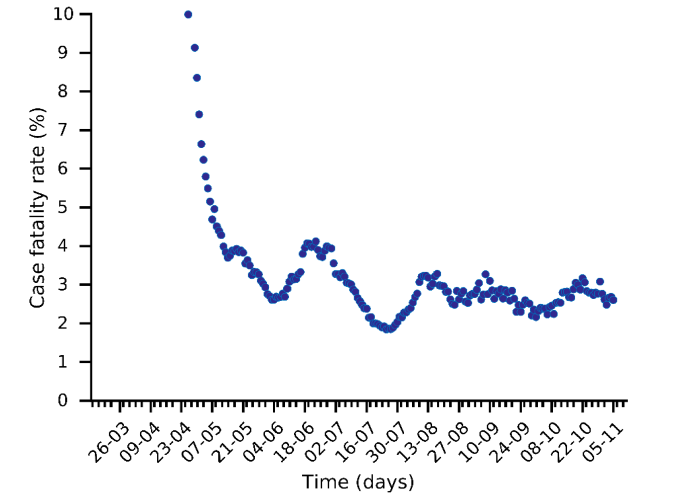
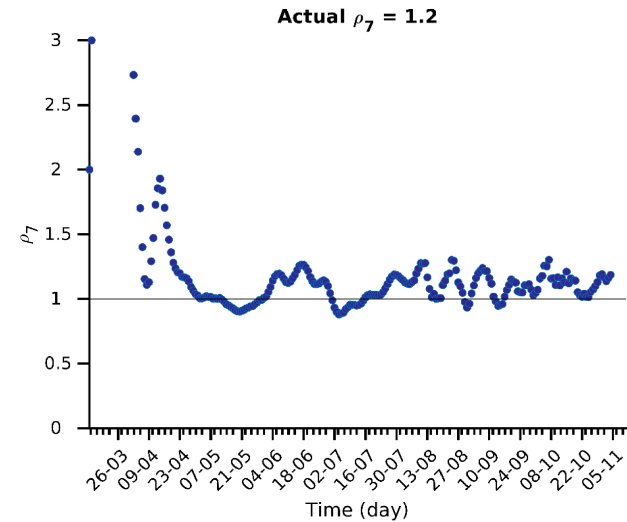
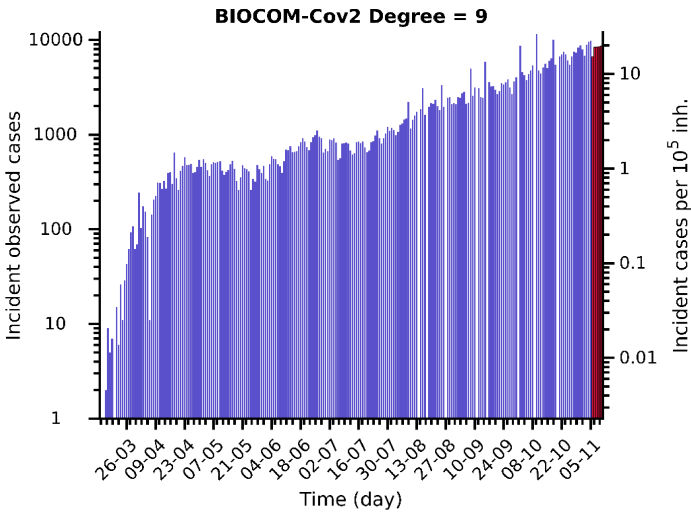
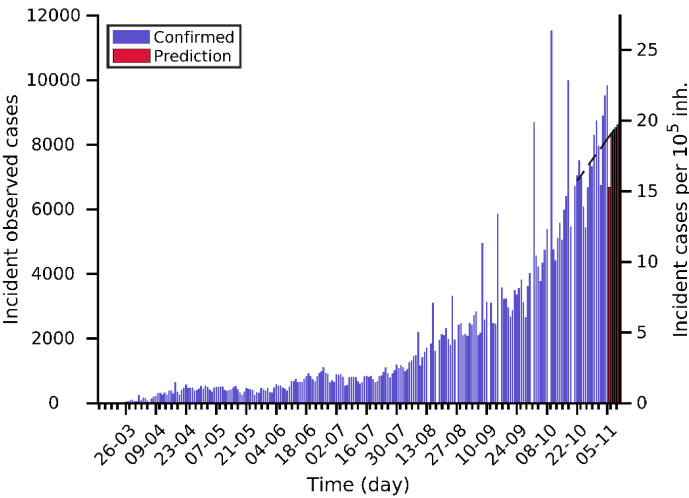


Ukraine 05-11-2020. Pop: 43.7M. Cumulative incidence: 984/10⁵

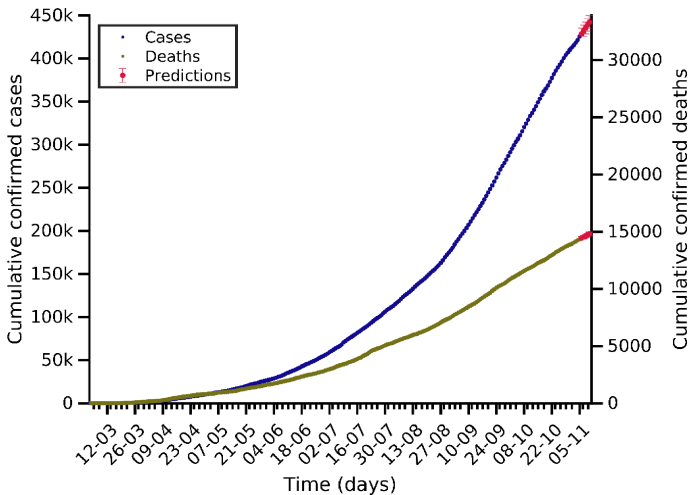


Predictions for next days		
Day	Number of cases	95% Confidence Interval
06-11-2020	437144 (+6677)	[430467 - 456818]
08-11-2020	453938 (+8442)	[433378 - 474497]
10-11-2020	471091 (+8622)	[448536 - 493646]

Current indicators		
A ₁₄	EPG	CFR
246	292	2.60 %

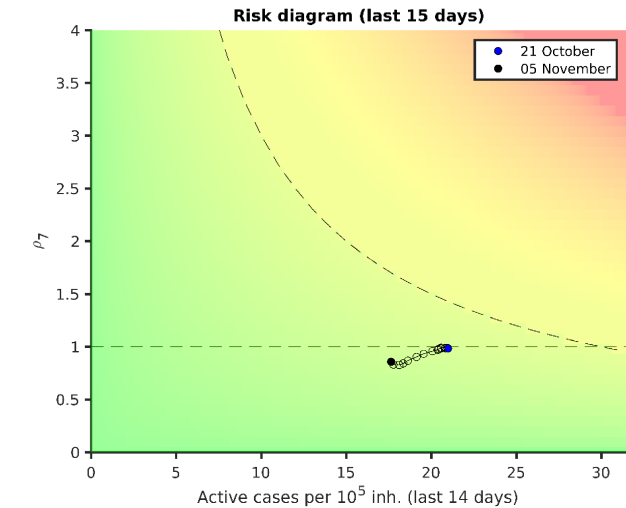
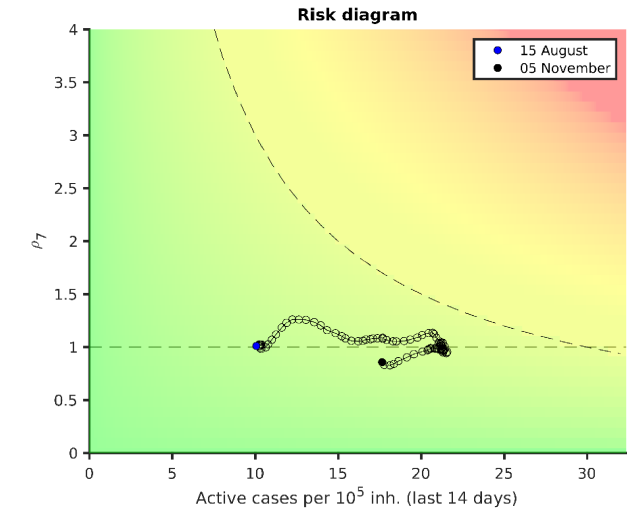
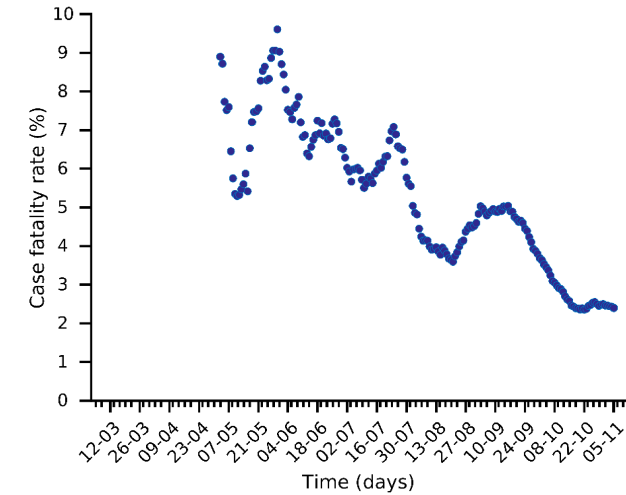
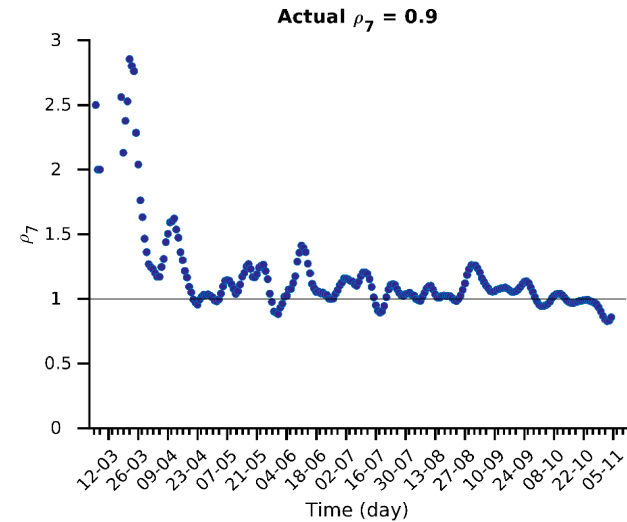
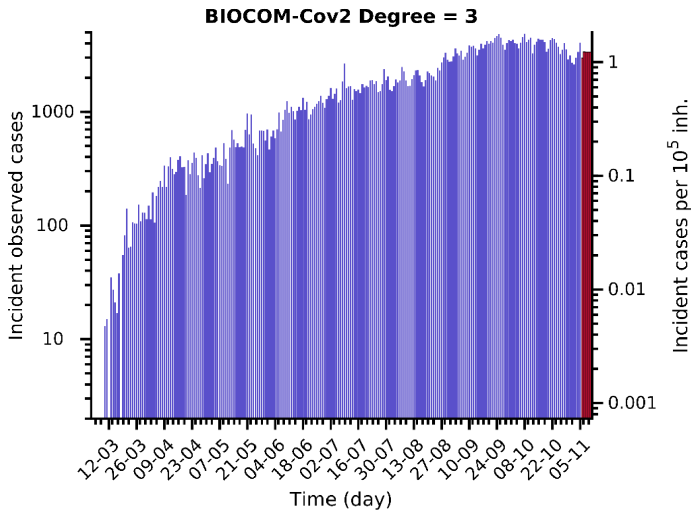
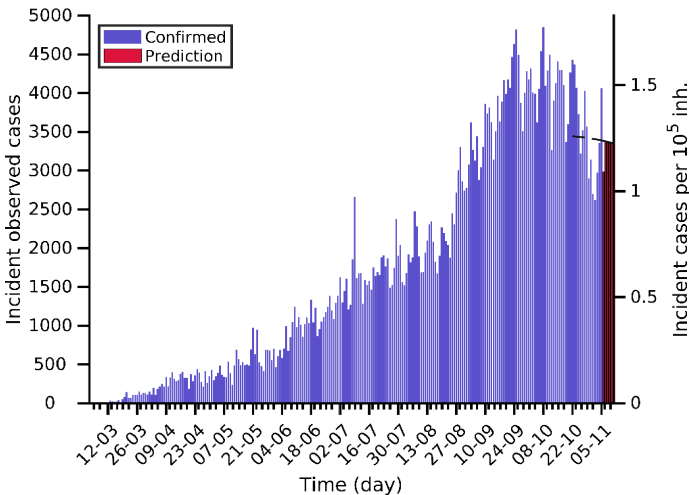


Indonesia 05-11-2020. Pop: 273.5M. Cumulative incidence: 156/10⁵

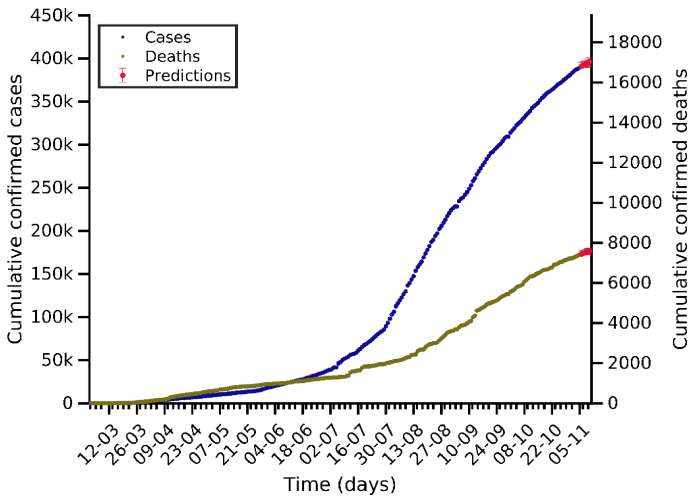


Predictions for next days		
Day	Number of cases	95% Confidence Interval
06-11-2020	428780 (+2984)	[425796 - 435384]
08-11-2020	435527 (+3370)	[428665 - 442390]
10-11-2020	442248 (+3357)	[434832 - 449664]

Current indicators		
A ₁₄	EPG	CFR
18	15	2.40 %

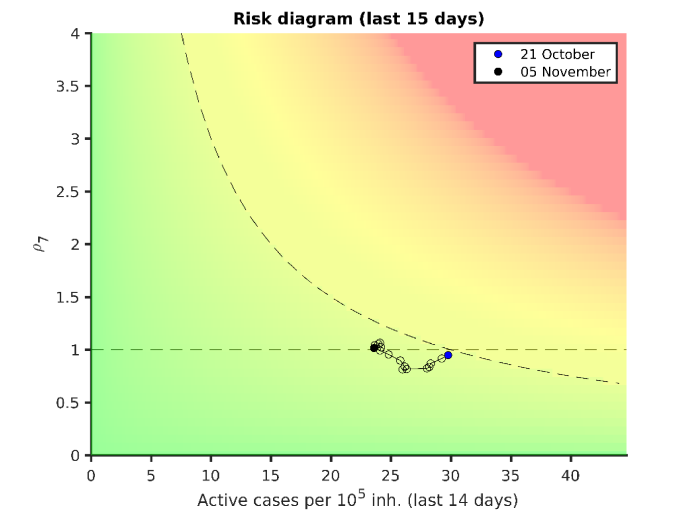
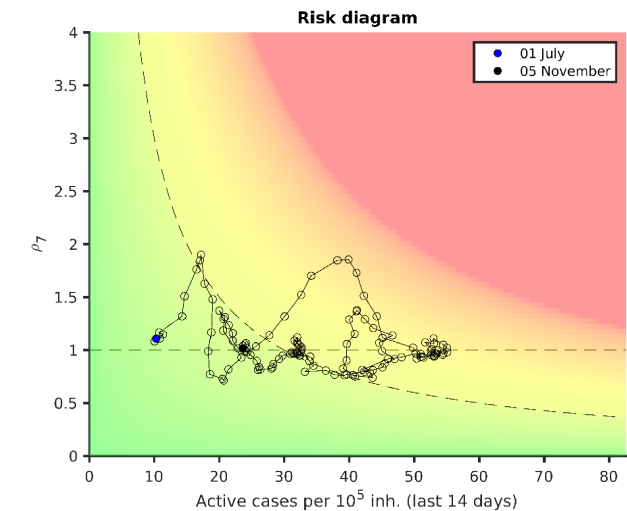
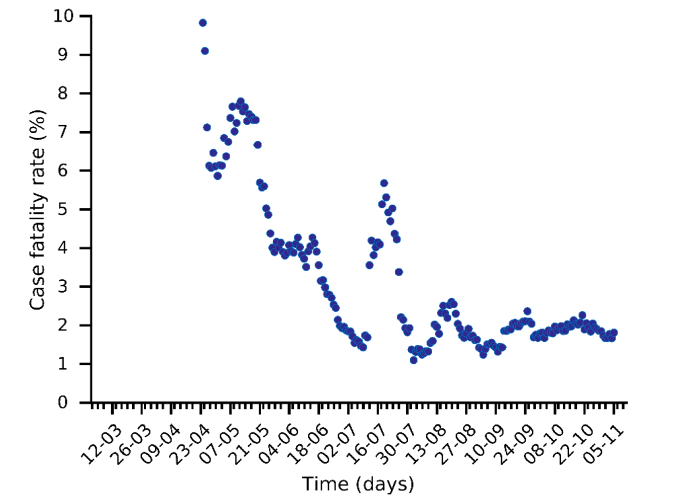
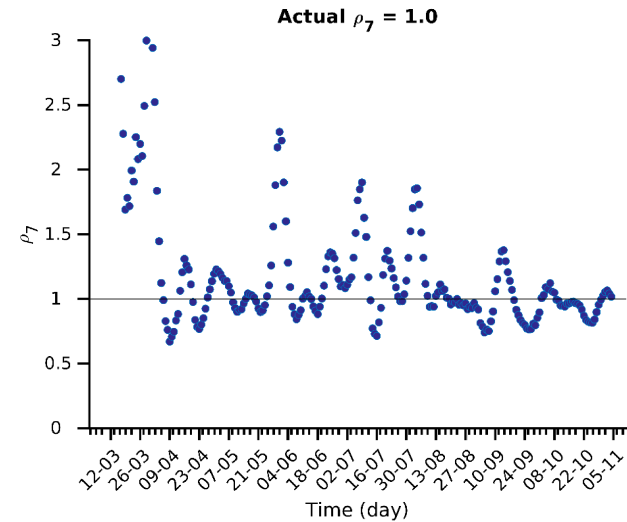
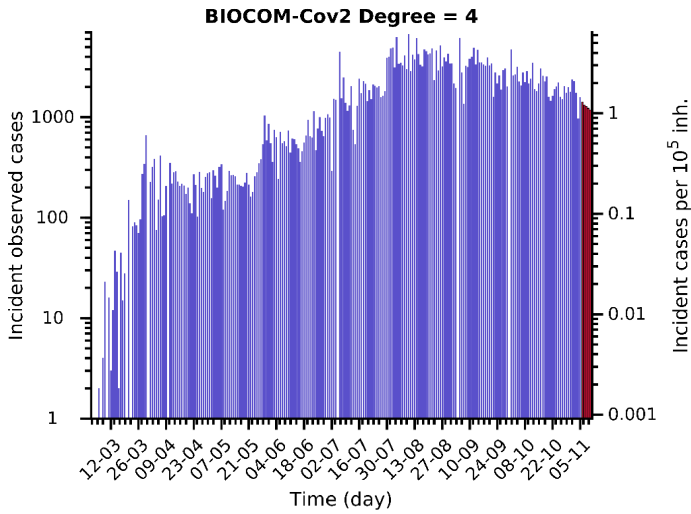
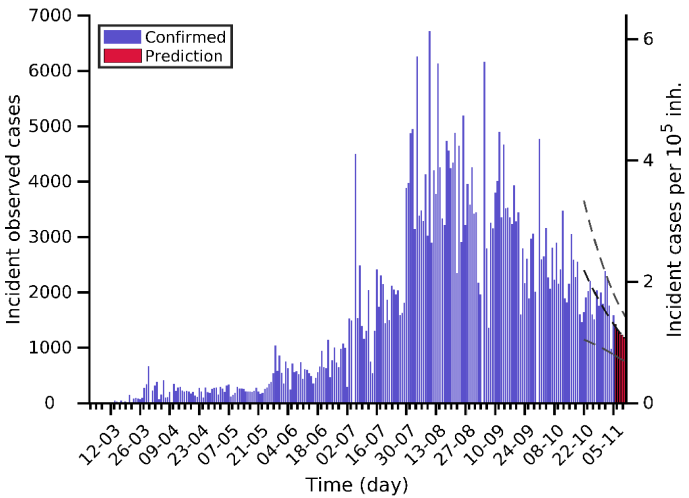


Philippines 05-11-2020. Pop: 109.6M. Cumulative incidence: 356/10⁵

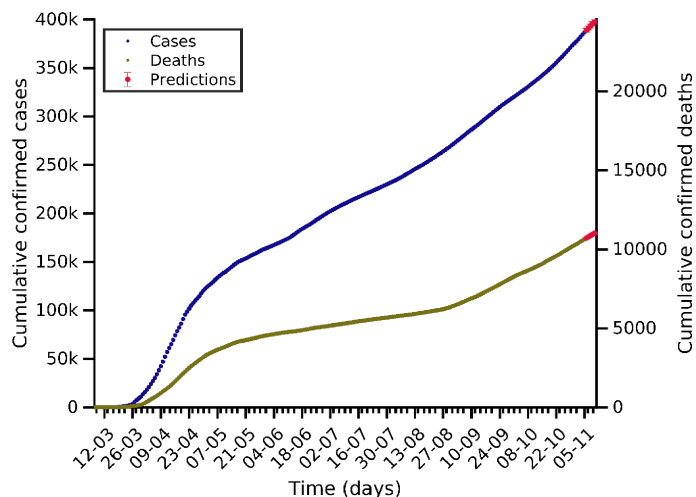


Predictions for next days		
Day	Number of cases	95% Confidence Interval
06-11-2020	391146 (+1421)	[389725 - 395519]
08-11-2020	393749 (+1276)	[389725 - 398248]
10-11-2020	396157 (+1181)	[391418 - 400896]

Current indicators		
A ₁₄	EPG	CFR
24	24	1.81 %



Turkey 05-11-2020. Pop: 84.3M. Cumulative incidence: 459/10⁵

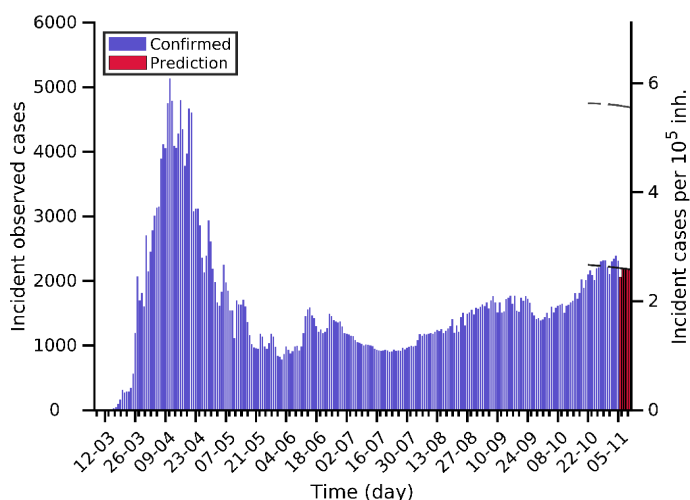


Predictions for next days

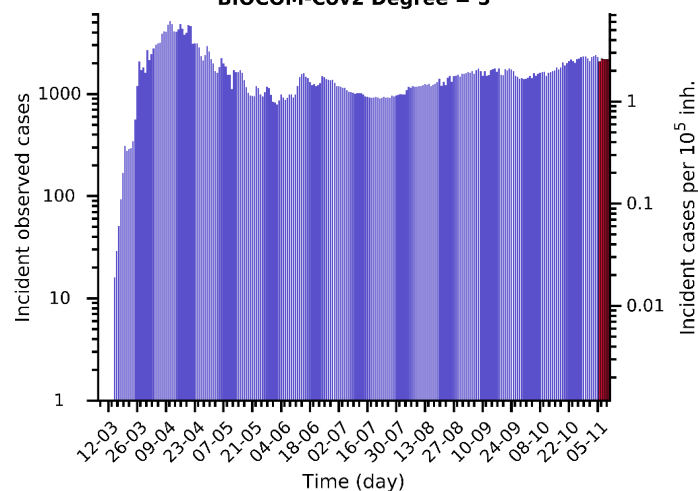
Day	Number of cases	95% Confidence Interval
06-11-2020	388881 (+2061)	[386827 - 390934]
08-11-2020	393264 (+2190)	[391131 - 395397]
10-11-2020	397630 (+2181)	[395327 - 399933]

Current indicators

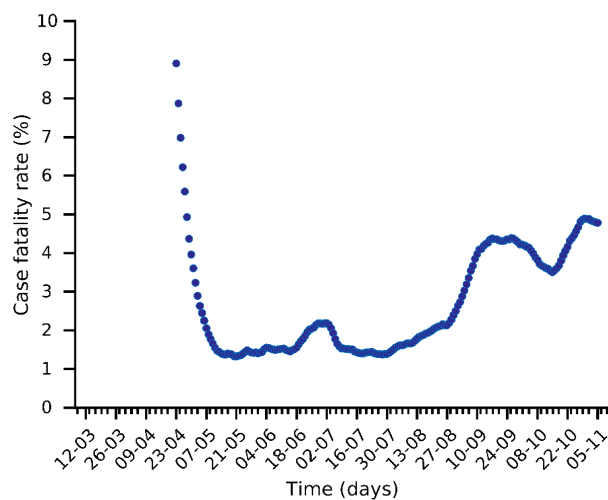
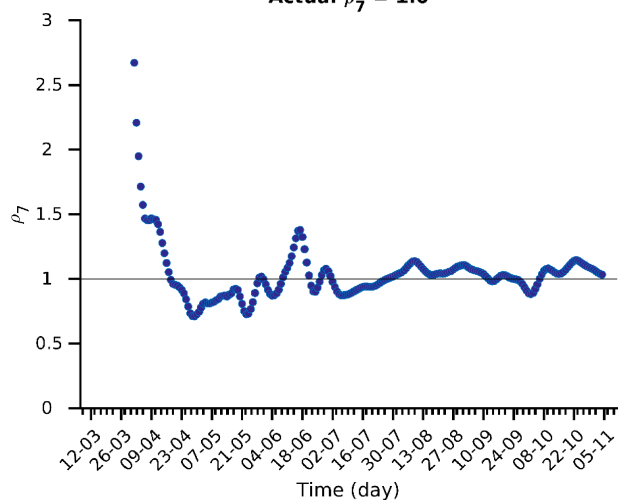
A ₁₄	EPG	CFR
37	38	4.78 %



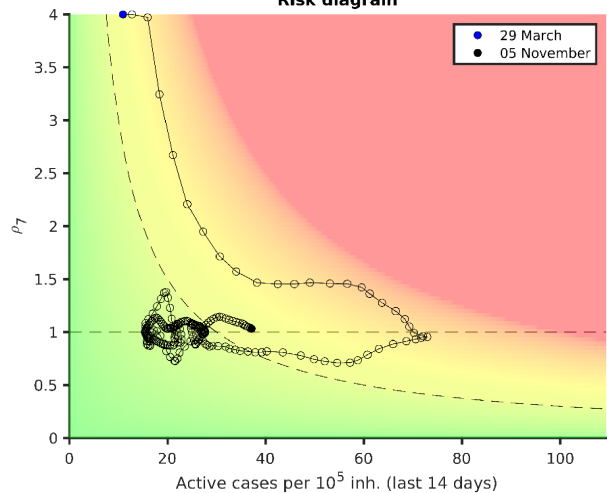
BIOCOM-Cov2 Degree = 5



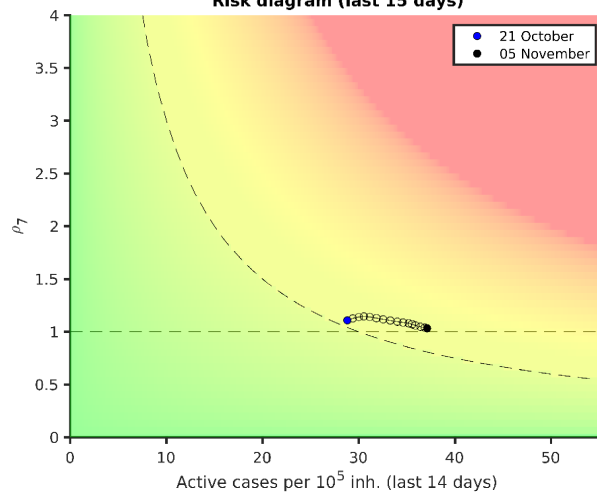
Actual $\rho_7 = 1.0$



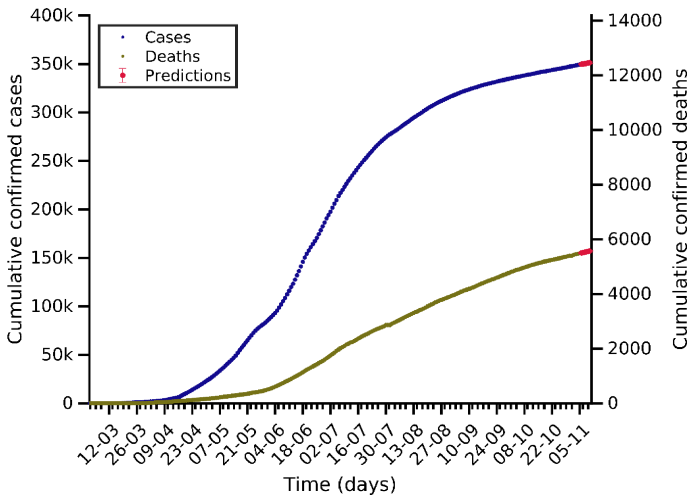
Risk diagram



Risk diagram (last 15 days)

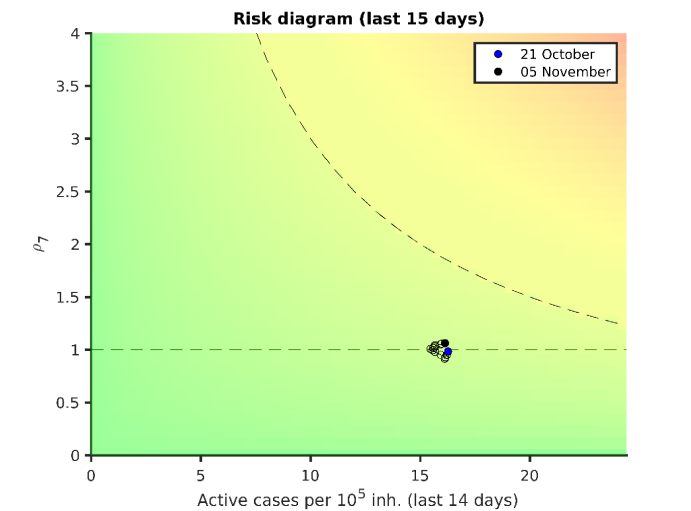
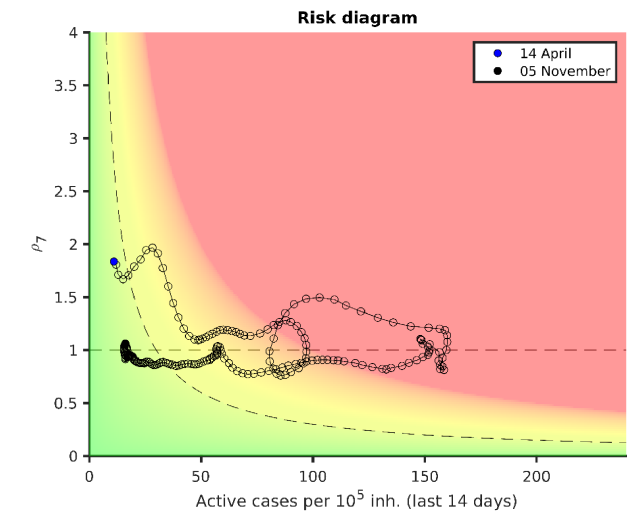
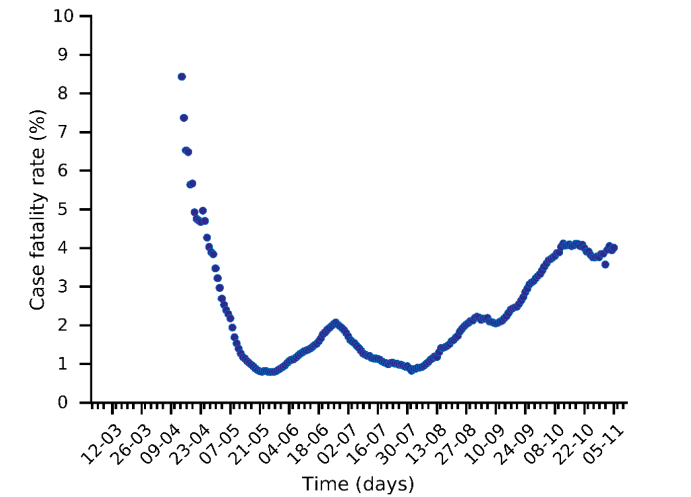
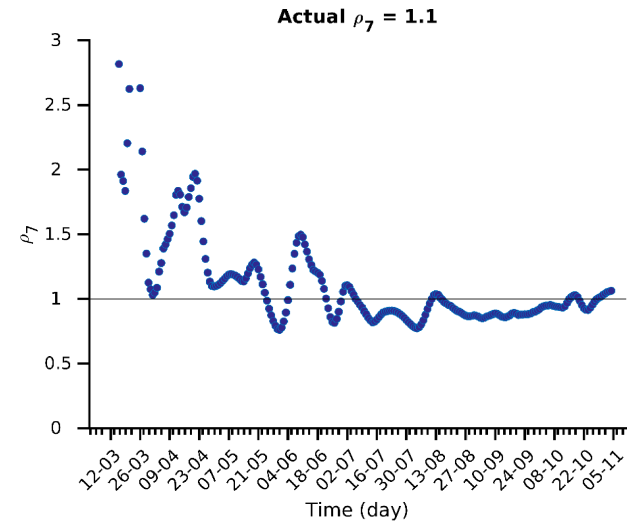
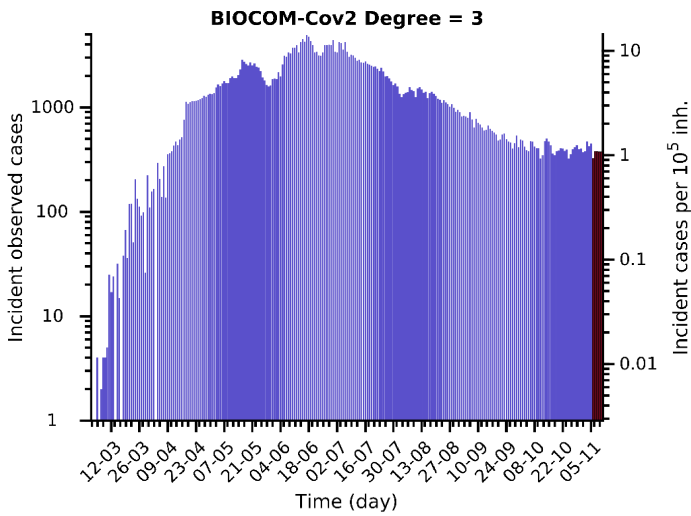
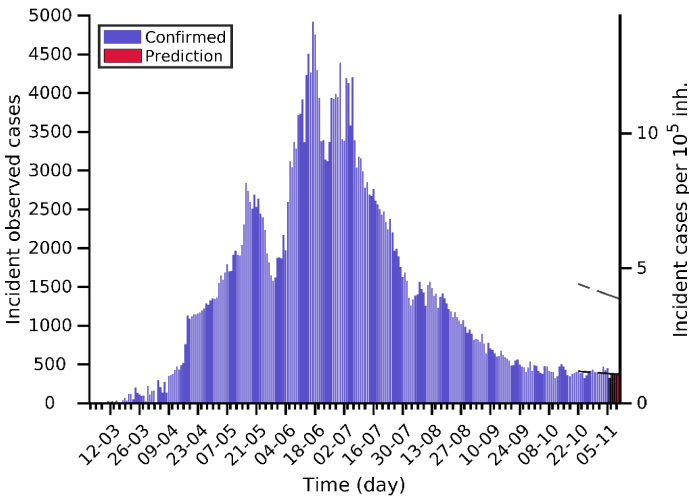


Saudi Arabia 05-11-2020. Pop: 34.8M. Cumulative incidence: 1004/10⁵

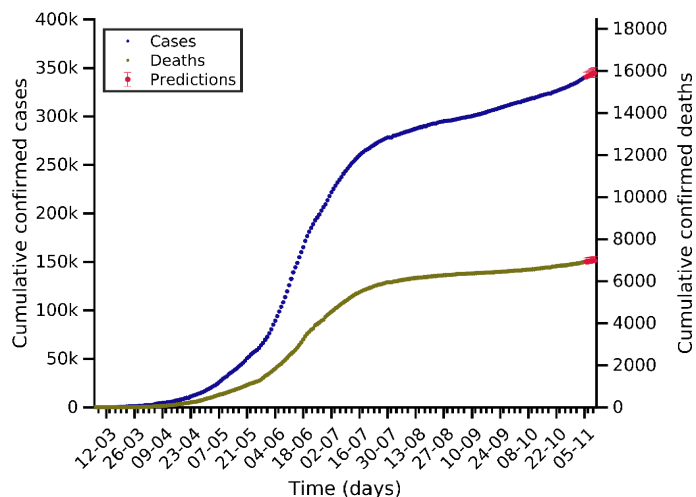


Predictions for next days		
Day	Number of cases	95% Confidence Interval
06-11-2020	349710 (+324)	[349386 - 350445]
08-11-2020	350467 (+378)	[349705 - 351229]
10-11-2020	351217 (+374)	[350398 - 352036]

Current indicators		
A ₁₄	EPG	CFR
16	17	4.01 %



Pakistan 05-11-2020. Pop: 220.9M. Cumulative incidence: 154/10⁵

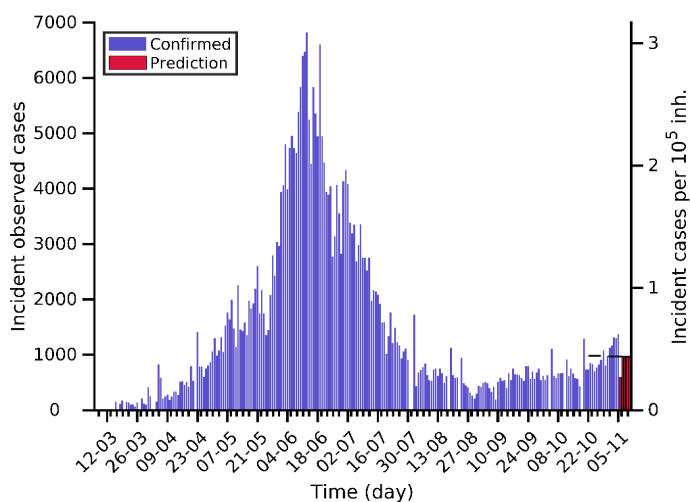


Predictions for next days

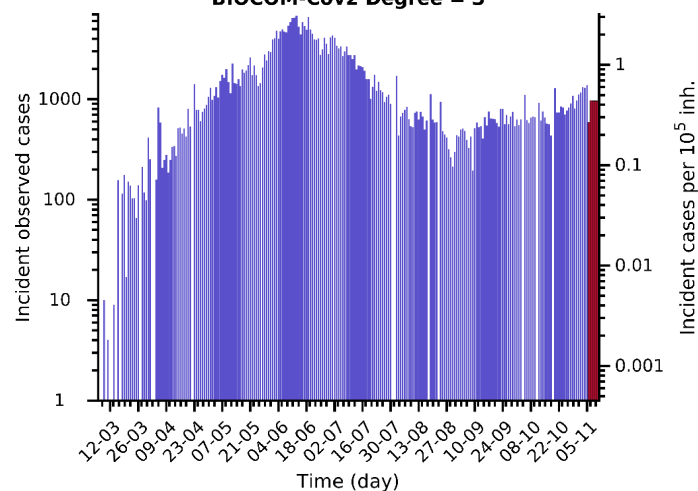
Day	Number of cases	95% Confidence Interval
06-11-2020	340839 (+588)	[340251 - 345802]
08-11-2020	342771 (+966)	[340251 - 347926]
10-11-2020	344699 (+963)	[340251 - 350261]

Current indicators

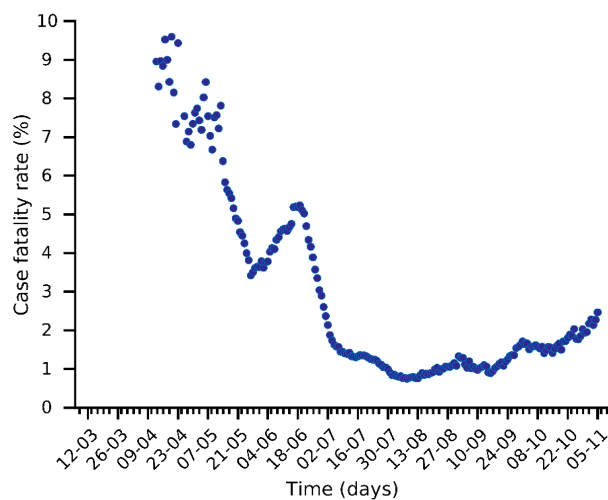
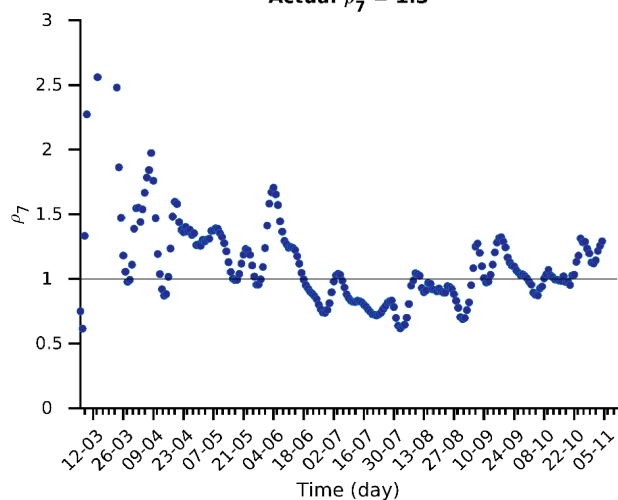
A ₁₄	EPG	CFR
6	8	2.46 %



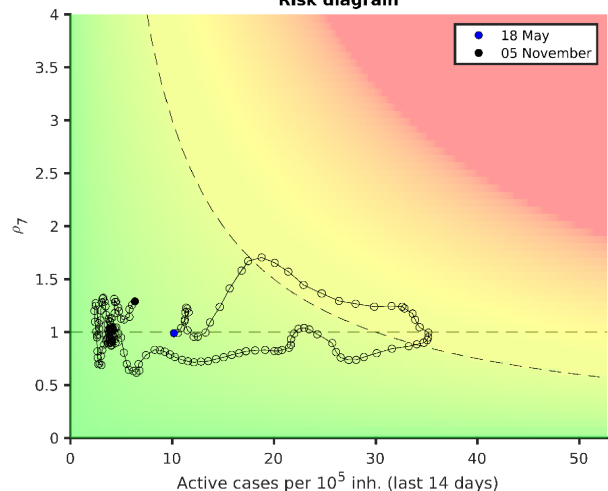
BIOCOM-Cov2 Degree = 3



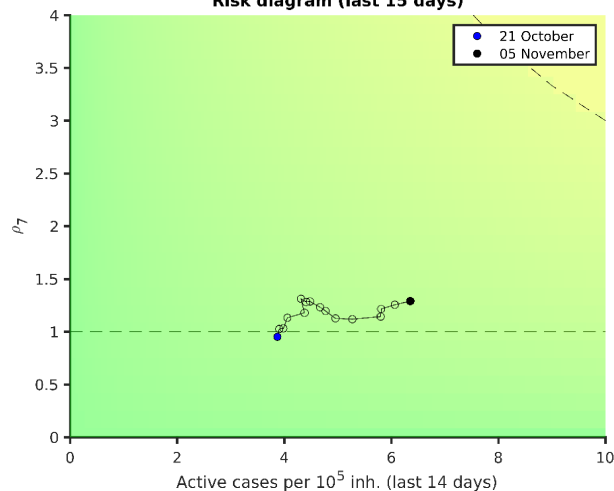
Actual $\rho_7 = 1.3$



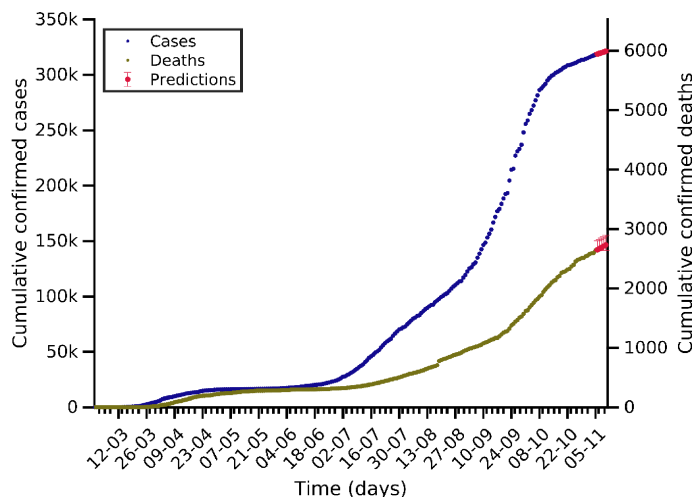
Risk diagram



Risk diagram (last 15 days)



Israel 05-11-2020. Pop: 8.7M. Cumulative incidence: 3675/10⁵

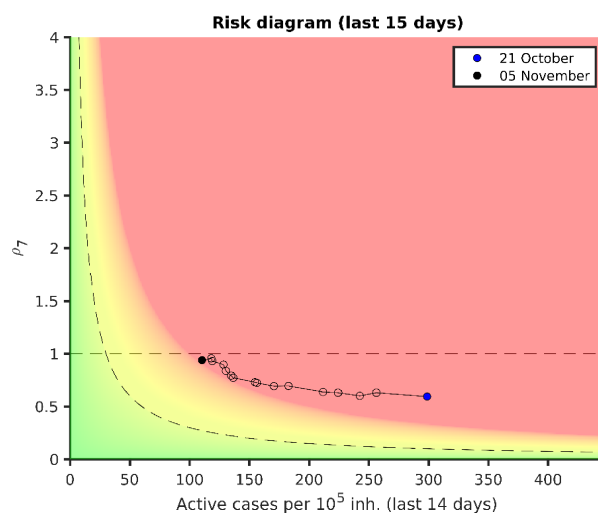
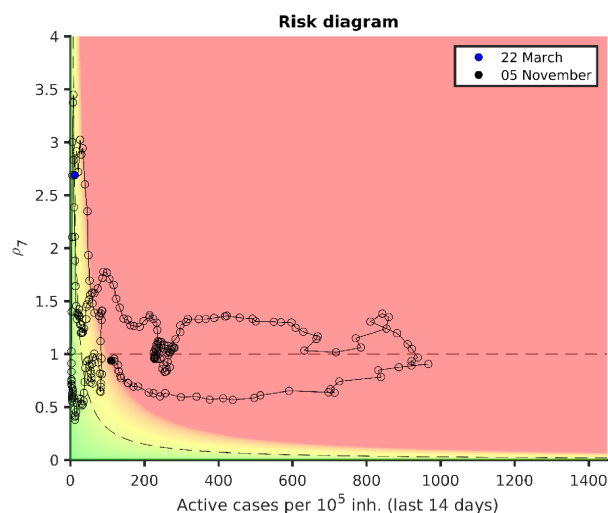
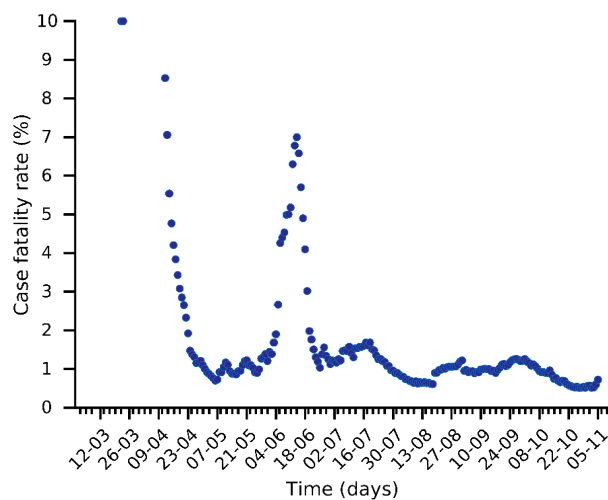
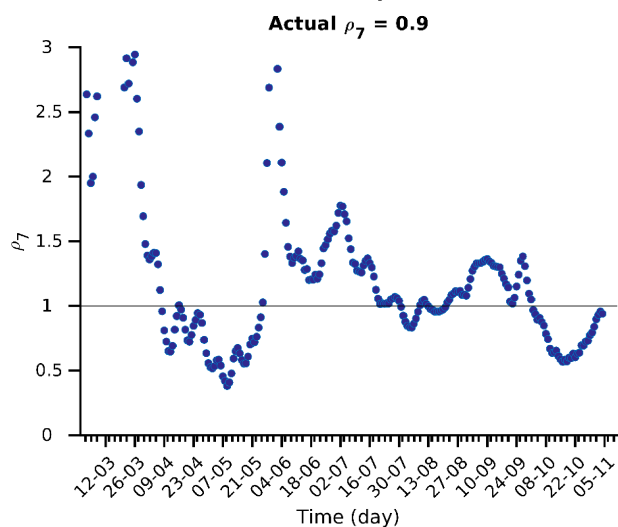
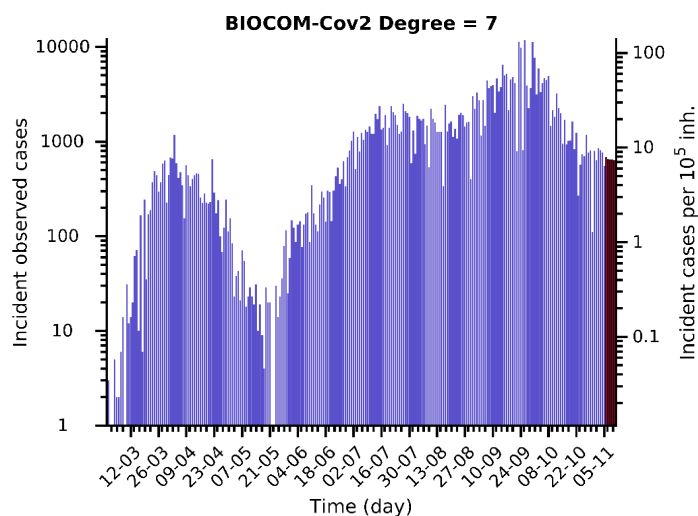
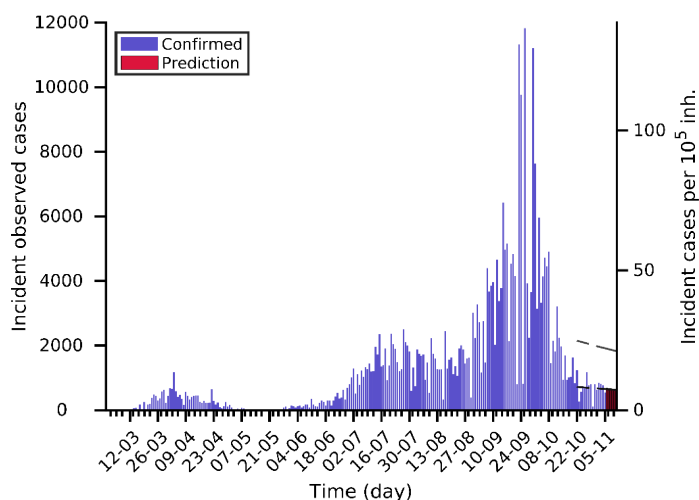


Predictions for next days

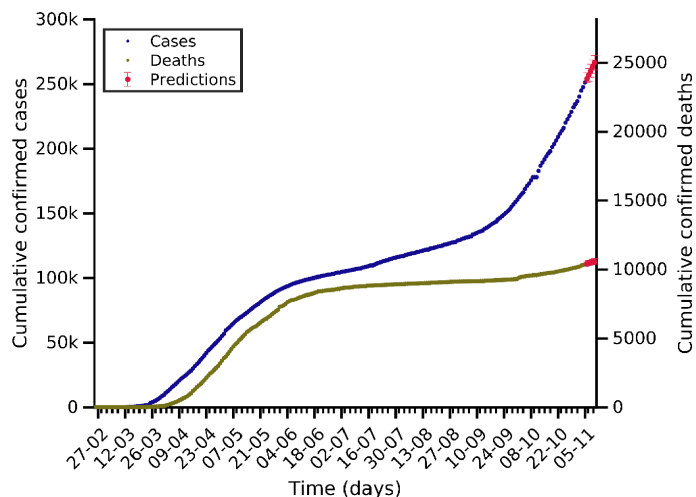
Day	Number of cases	95% Confidence Interval
06-11-2020	318788 (+677)	[318111 - 320075]
08-11-2020	320075 (+642)	[318741 - 321409]
10-11-2020	321346 (+633)	[319913 - 322779]

Current indicators

A ₁₄	EPG	CFR
110	104	0.72 %



Canada 05-11-2020. Pop: 37.7M. Cumulative incidence: 666/10⁵

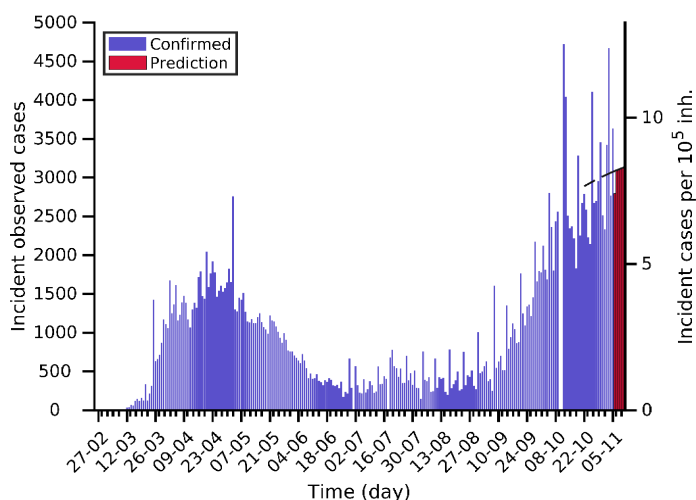


Predictions for next days

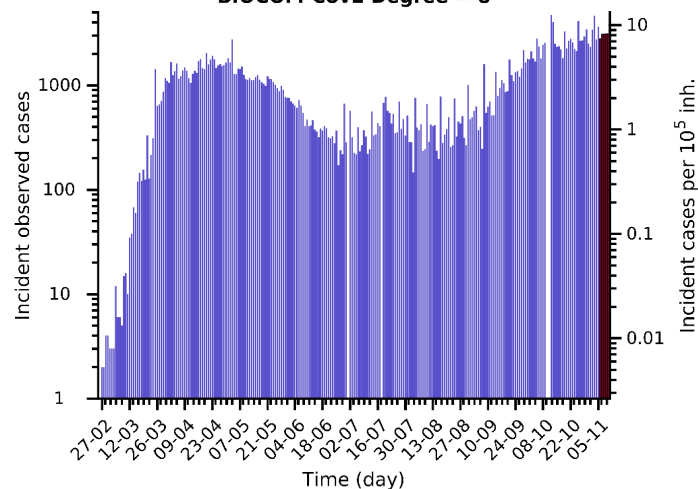
Day	Number of cases	95% Confidence Interval
06-11-2020	254133 (+2795)	[251338 - 258994]
08-11-2020	260337 (+3107)	[255273 - 265400]
10-11-2020	266582 (+3128)	[261077 - 272086]

Current indicators

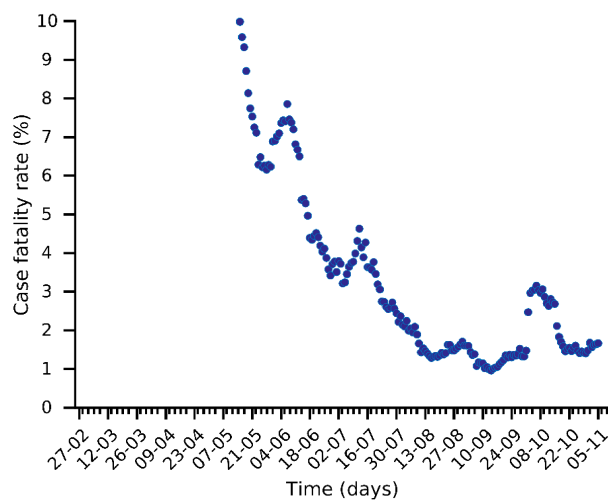
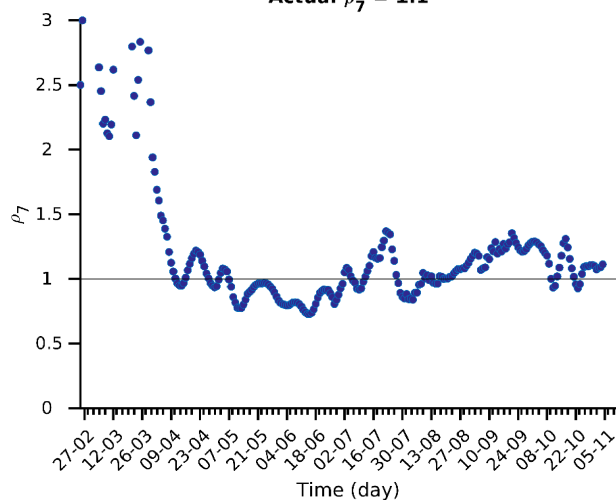
A ₁₄	EPG	CFR
112	124	1.66 %



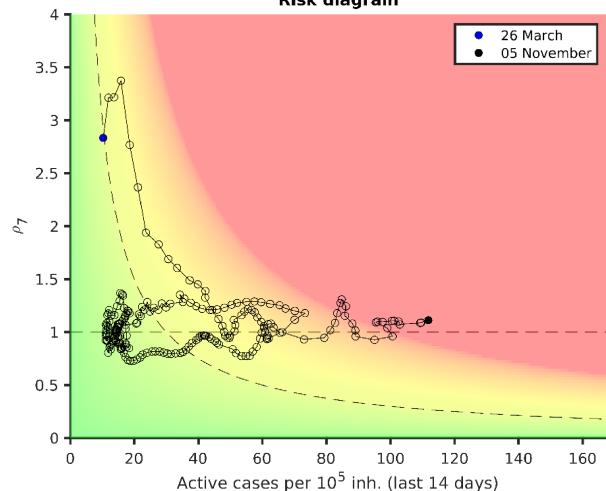
BIOCOM-Cov2 Degree = 8



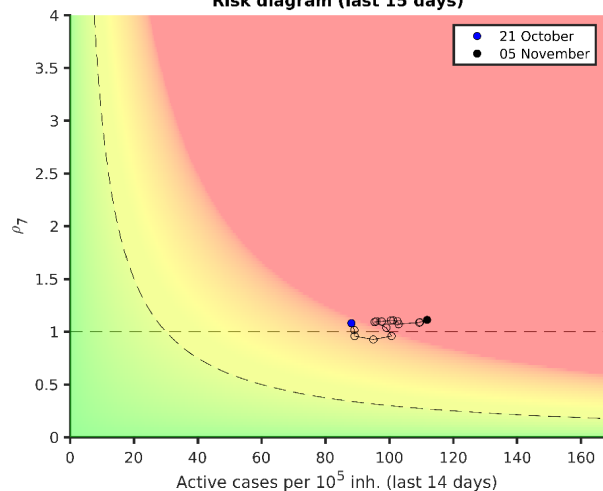
Actual $\rho_7 = 1.1$



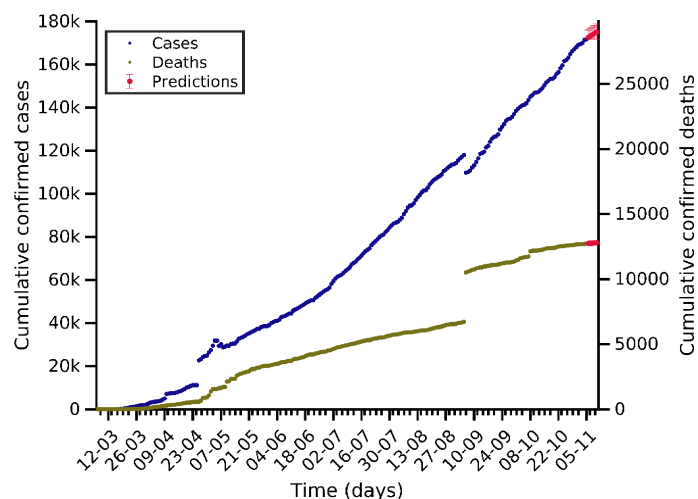
Risk diagram



Risk diagram (last 15 days)



Ecuador 05-11-2020. Pop: 17.6M. Cumulative incidence: 974/10⁵

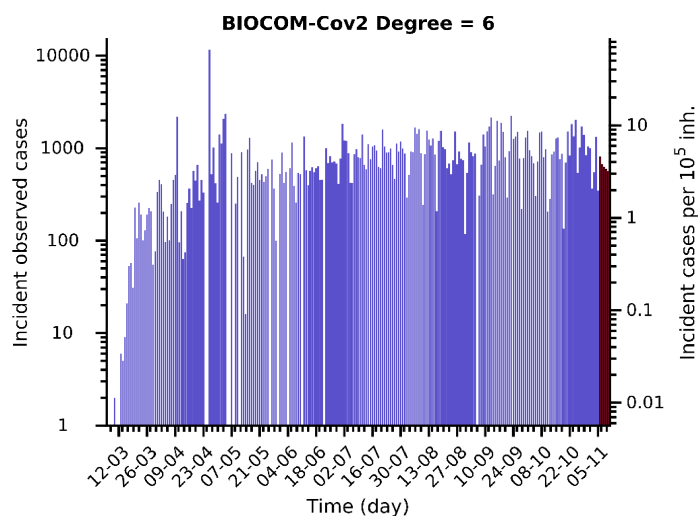
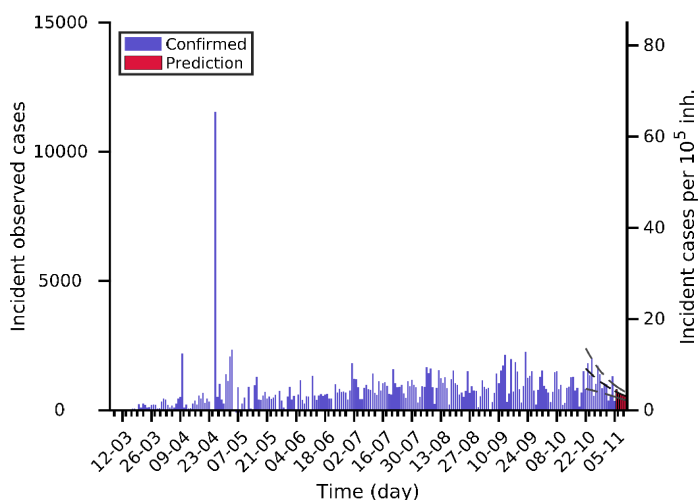


Predictions for next days

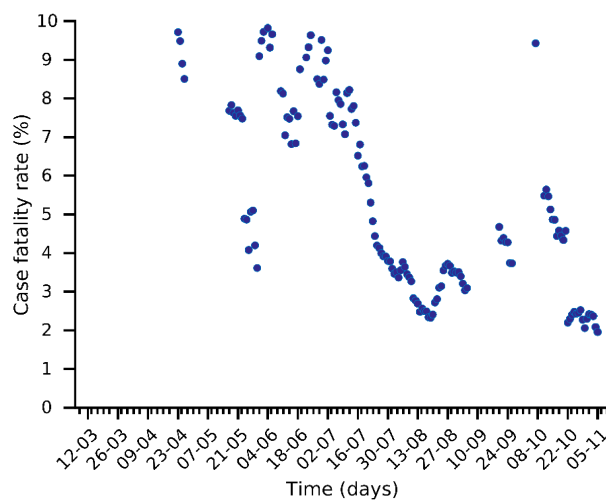
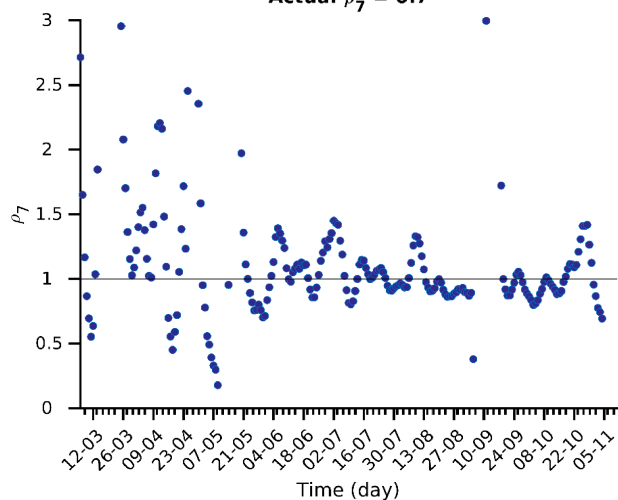
Day	Number of cases	95% Confidence Interval
06-11-2020	172584 (+801)	[171783 - 176115]
08-11-2020	173877 (+627)	[171783 - 177495]
10-11-2020	175026 (+558)	[171783 - 178801]

Current indicators

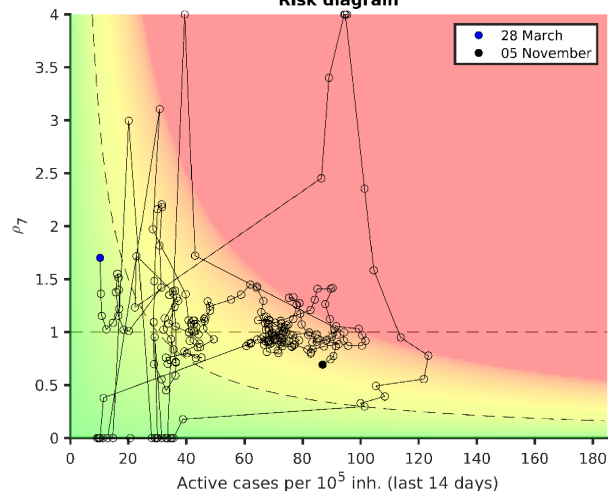
A ₁₄	EPG	CFR
87	60	1.95 %



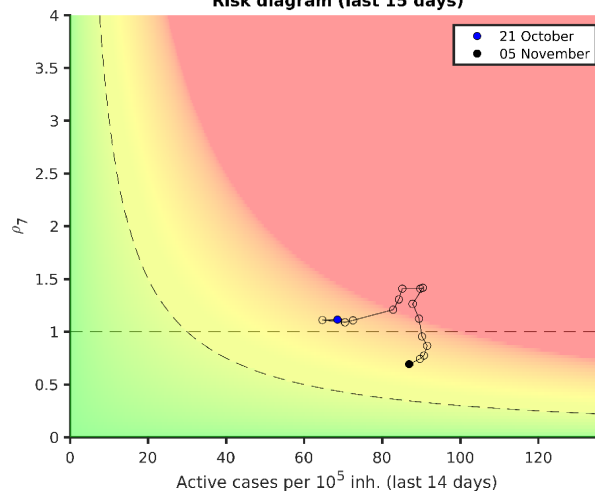
Actual $\rho_7 = 0.7$



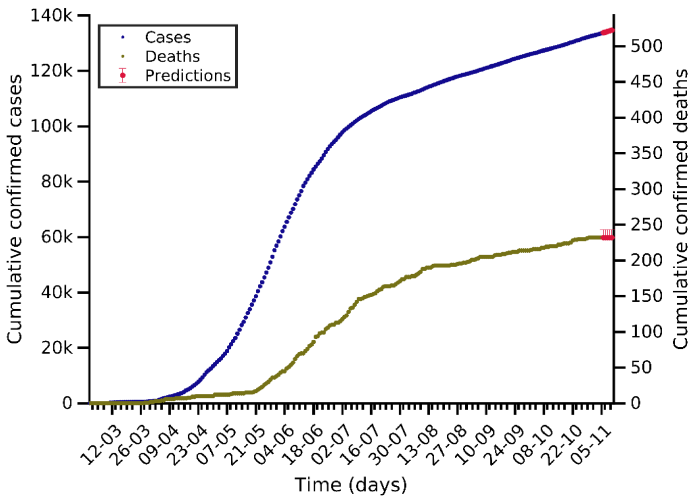
Risk diagram



Risk diagram (last 15 days)

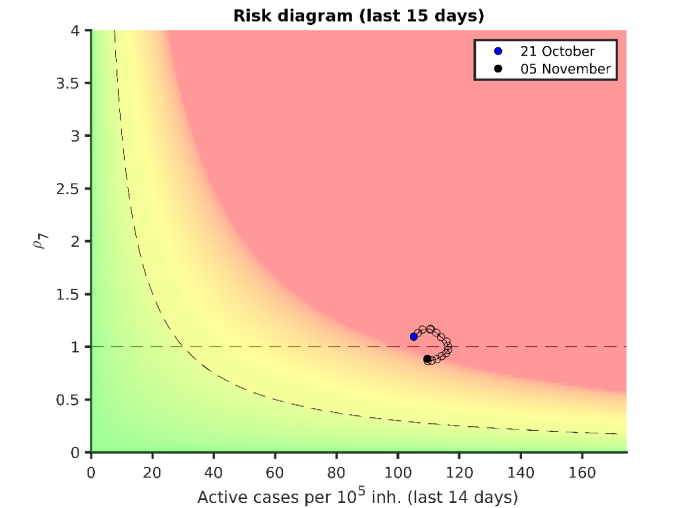
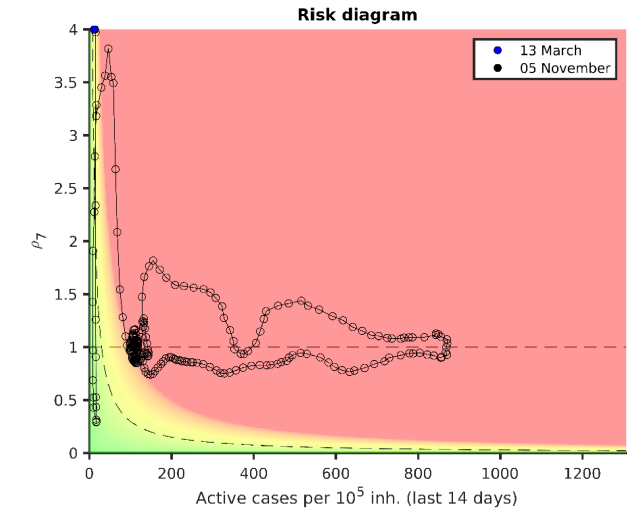
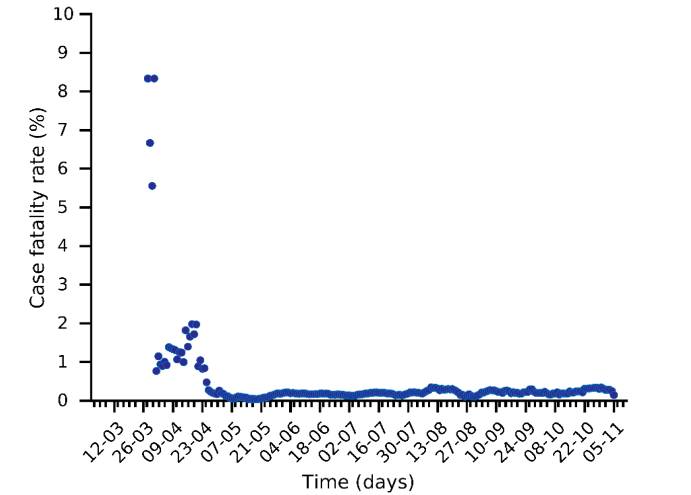
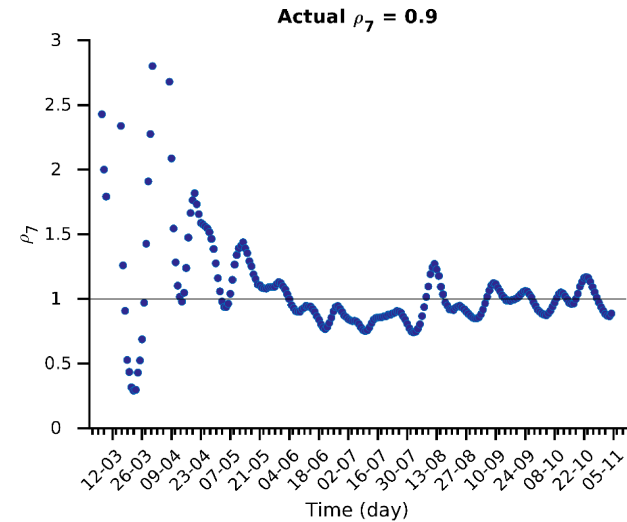
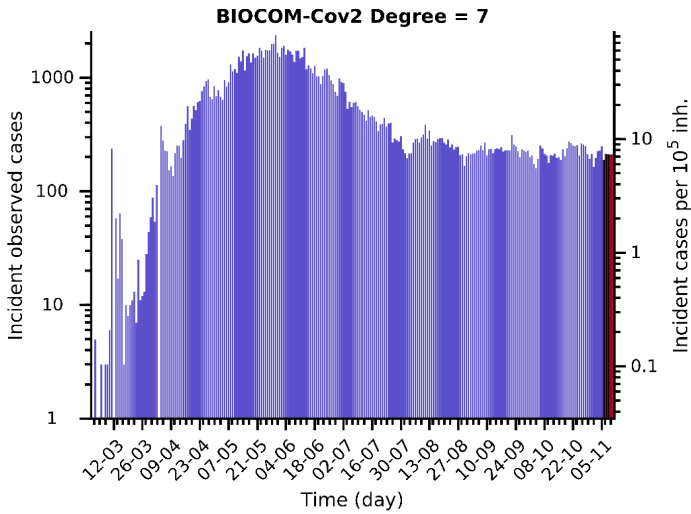
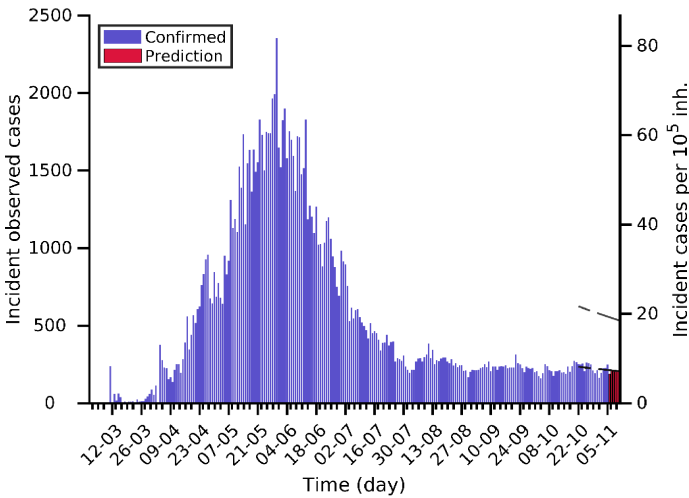


Qatar 05-11-2020. Pop: 2.9M. Cumulative incidence: 4638/10⁵

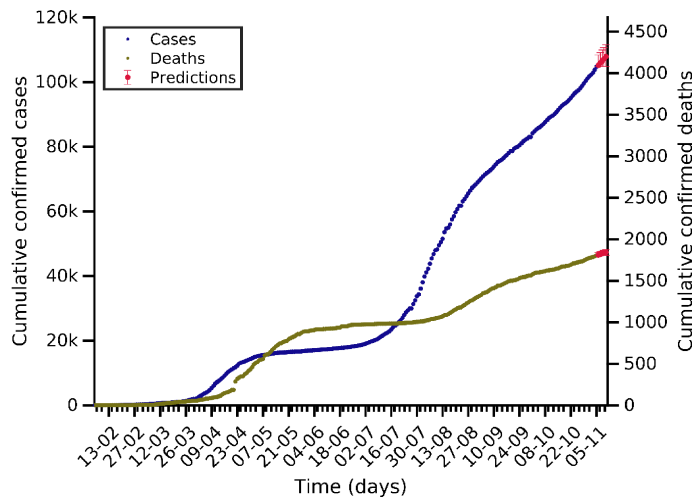


Predictions for next days		
Day	Number of cases	95% Confidence Interval
06-11-2020	133807 (+188)	[133619 - 134132]
08-11-2020	134229 (+210)	[133892 - 134566]
10-11-2020	134646 (+208)	[134284 - 135008]

Current indicators		
A ₁₄	EPG	CFR
110	97	0.14 %



Japan 05-11-2020. Pop: 126.5M. Cumulative incidence: 83/10⁵

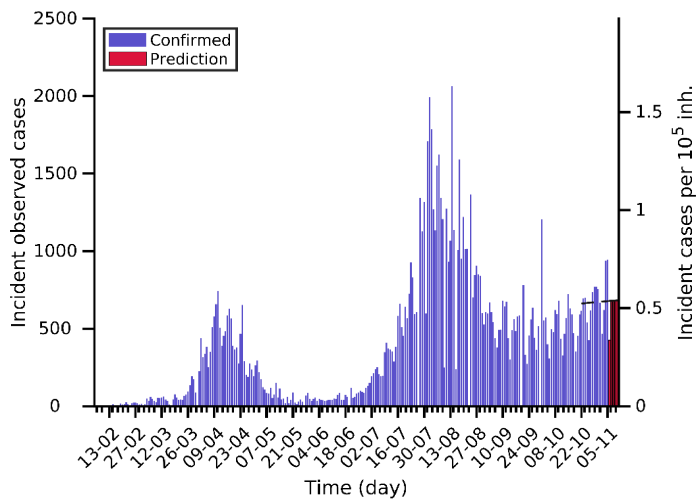


Predictions for next days

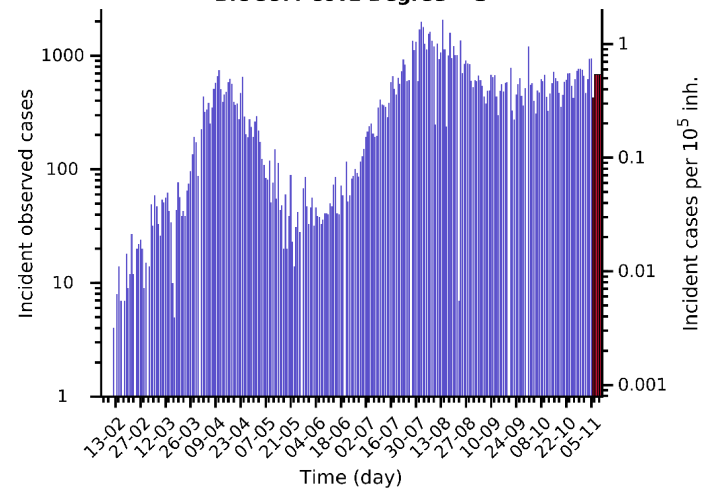
Day	Number of cases	95% Confidence Interval
06-11-2020	105207 (+425)	[104782 - 108407]
08-11-2020	106568 (+681)	[104782 - 109895]
10-11-2020	107932 (+682)	[104782 - 111534]

Current indicators

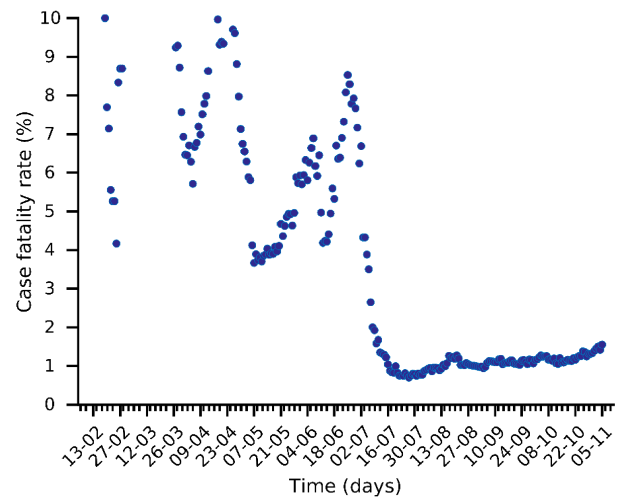
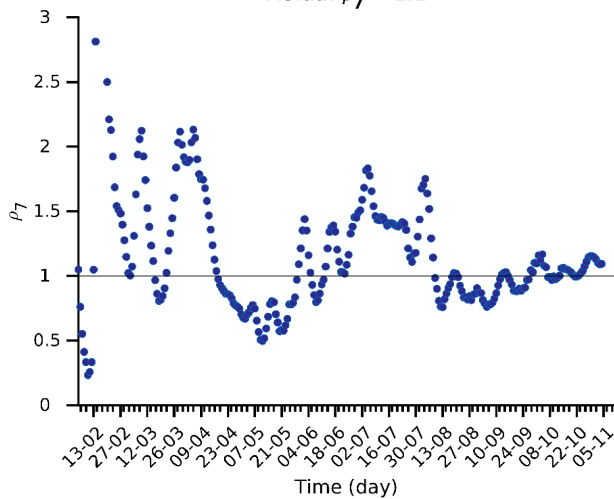
A ₁₄	EPG	CFR
8	8	1.55 %



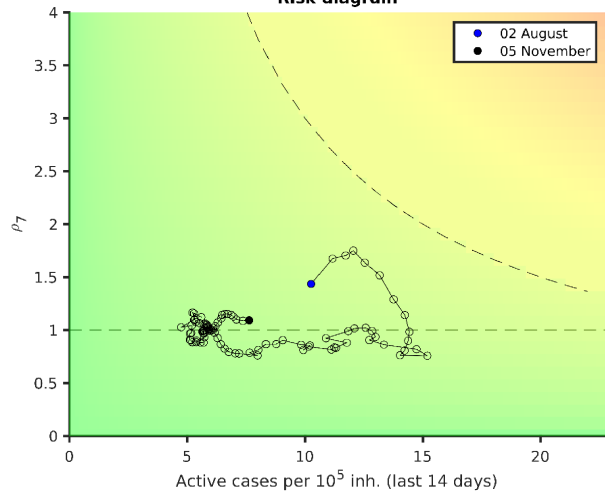
BIOCOM-Cov2 Degree = 3



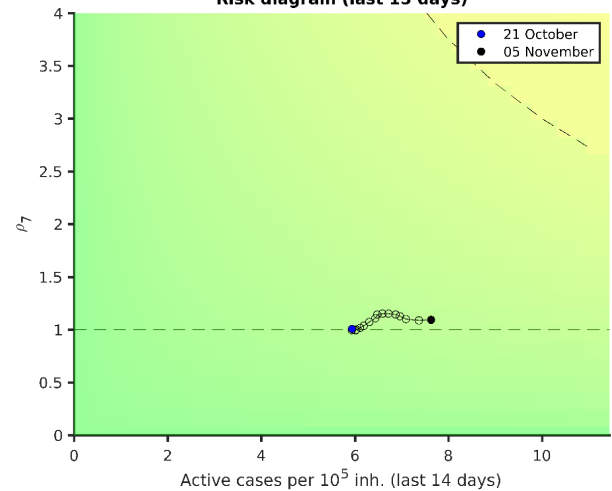
Actual $\rho_7 = 1.1$



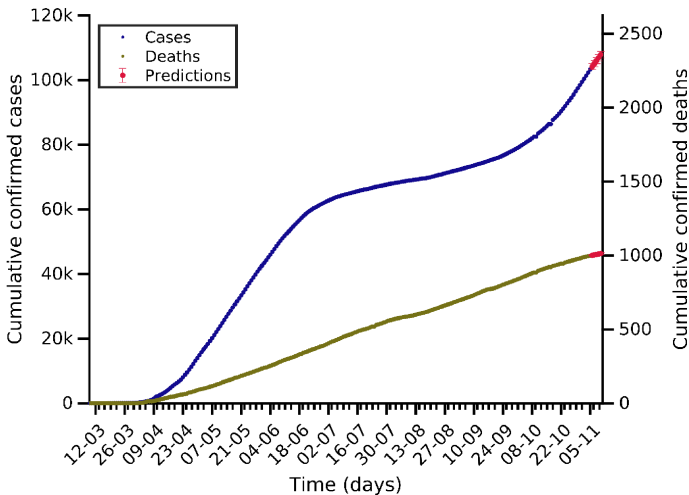
Risk diagram



Risk diagram (last 15 days)

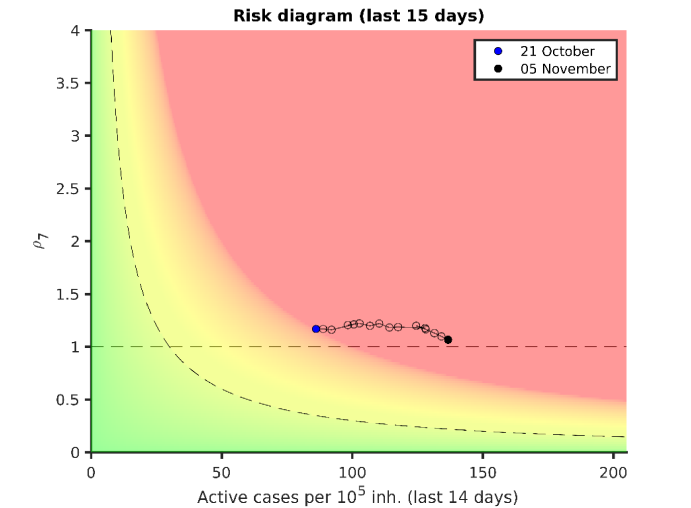
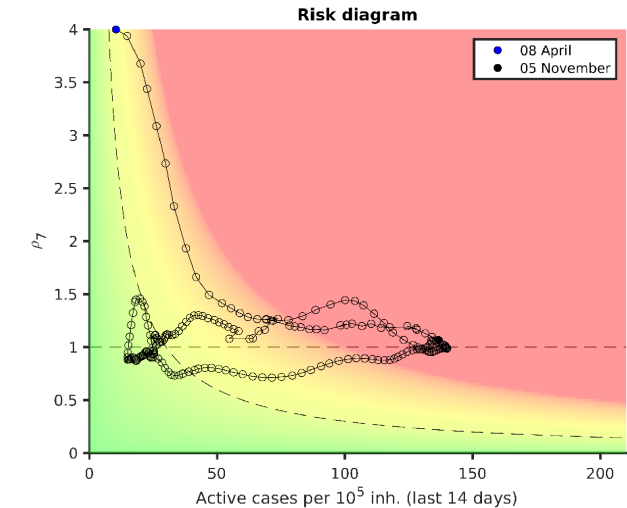
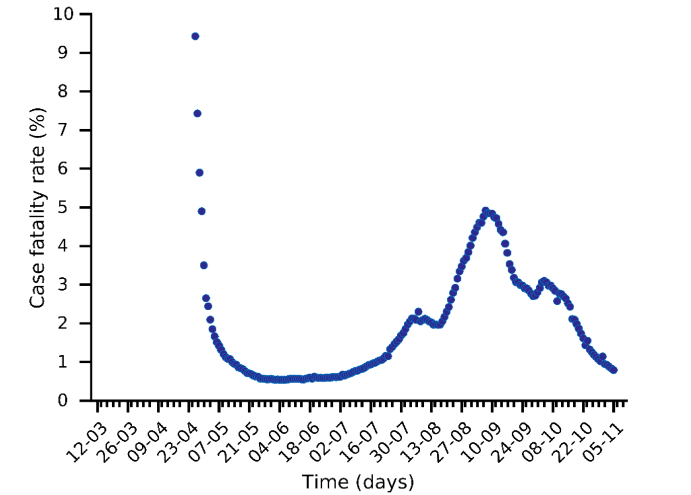
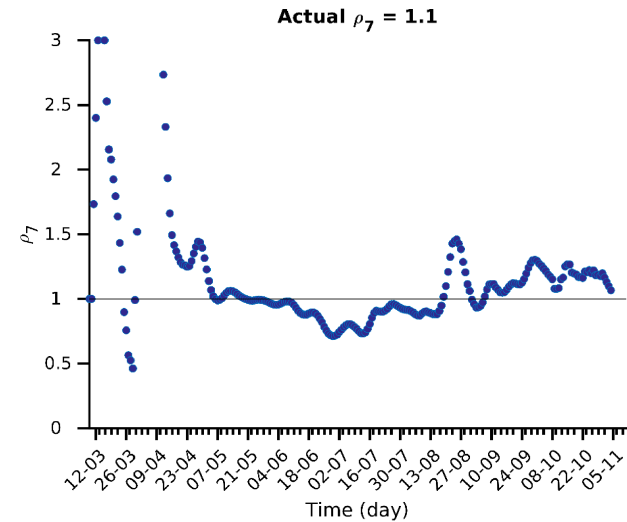
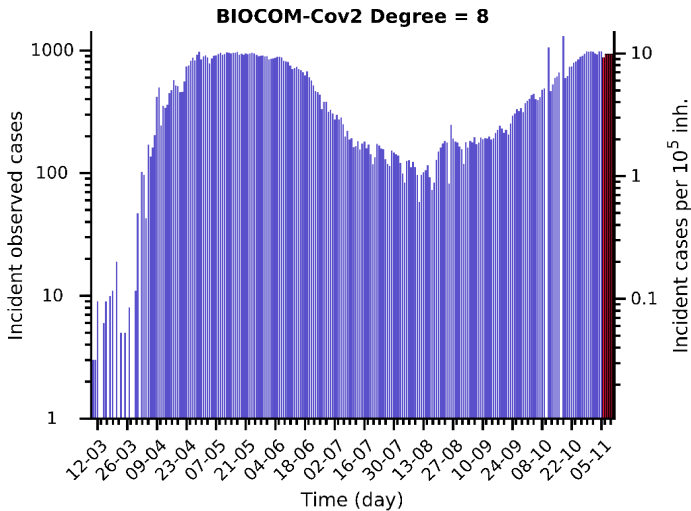
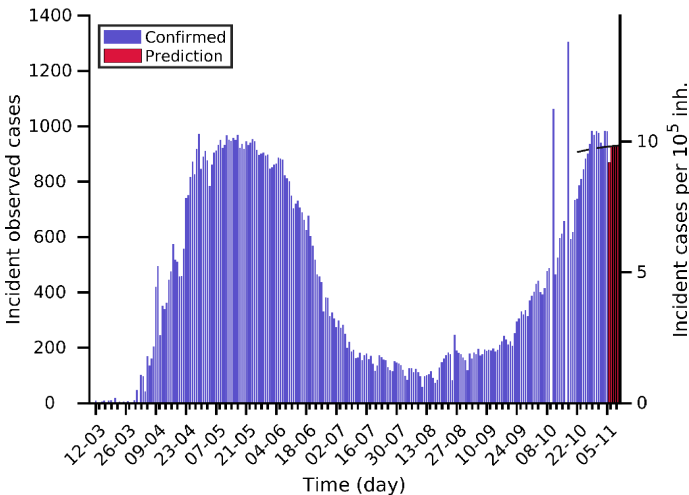


Belarus 05-11-2020. Pop: 9.4M. Cumulative incidence: 1093/10⁵

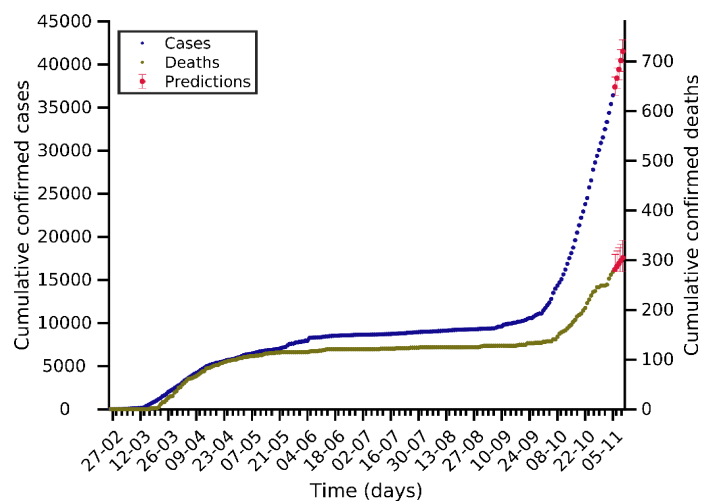


Predictions for next days		
Day	Number of cases	95% Confidence Interval
06-11-2020	104165 (+870)	[103295 - 105102]
08-11-2020	106023 (+929)	[105048 - 106997]
10-11-2020	107883 (+930)	[106827 - 108939]

Current indicators		
A ₁₄	EPG	CFR
137	146	0.79 %



Malaysia 05-11-2020. Pop: 32.4M. Cumulative incidence: 113/10⁵

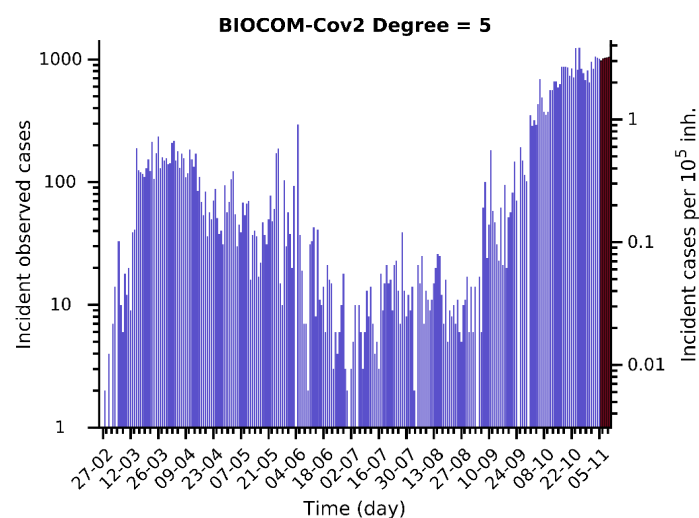
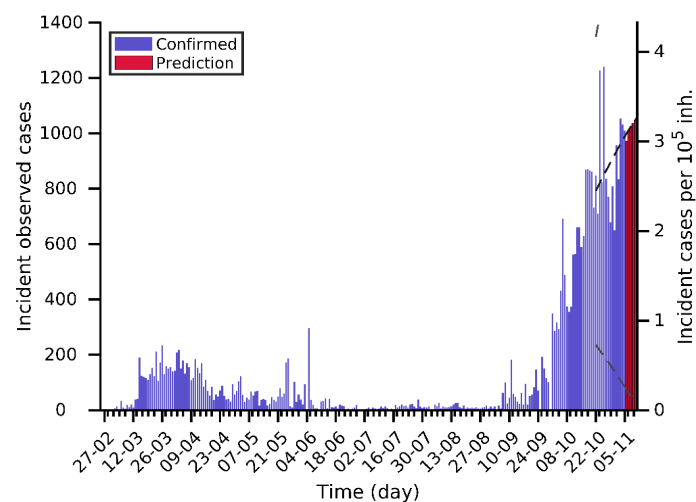


Predictions for next days

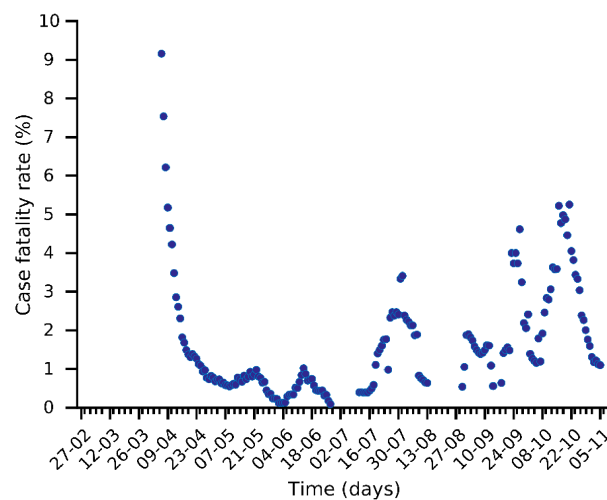
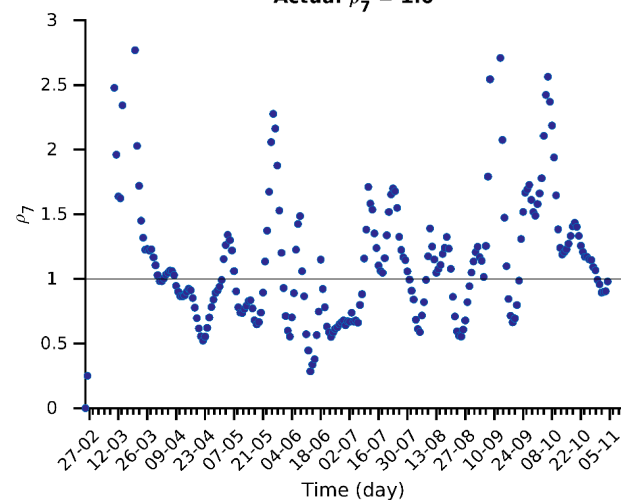
Day	Number of cases	95% Confidence Interval
06-11-2020	37406 (+972)	[36434 - 38568]
08-11-2020	39444 (+1025)	[38228 - 40659]
10-11-2020	41527 (+1048)	[40188 - 42867]

Current indicators

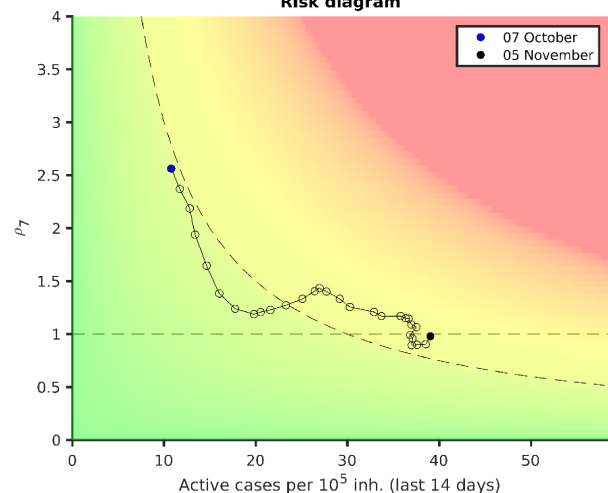
A ₁₄	EPG	CFR
39	38	1.10 %



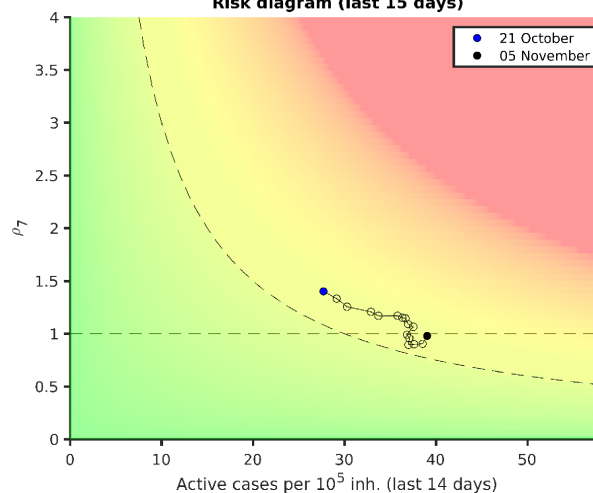
Actual $\rho_7 = 1.0$



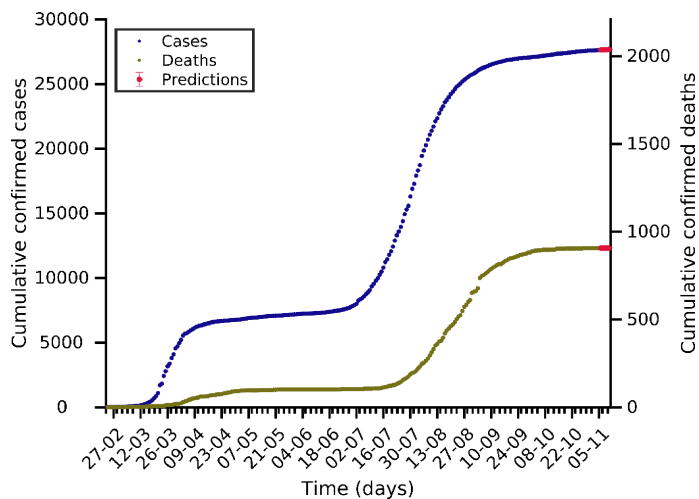
Risk diagram



Risk diagram (last 15 days)



Australia 05-11-2020. Pop: 25.5M. Cumulative incidence: 108/10⁵

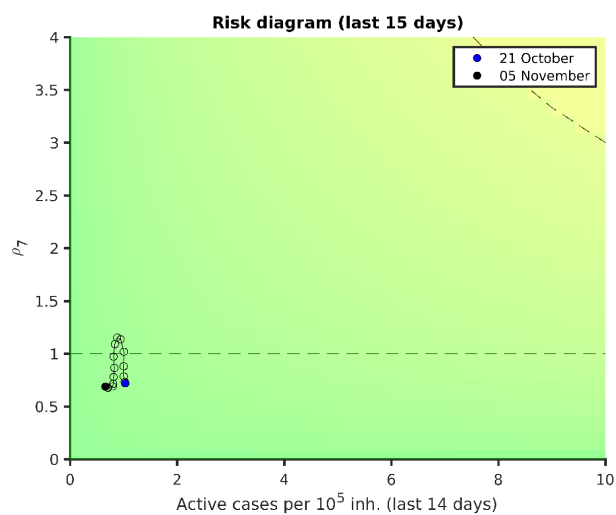
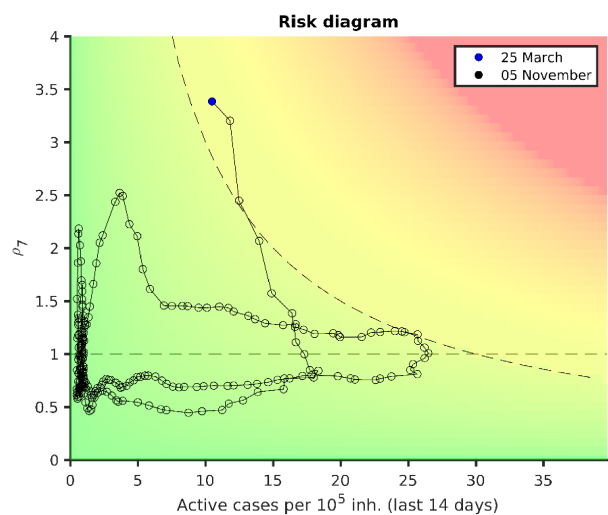
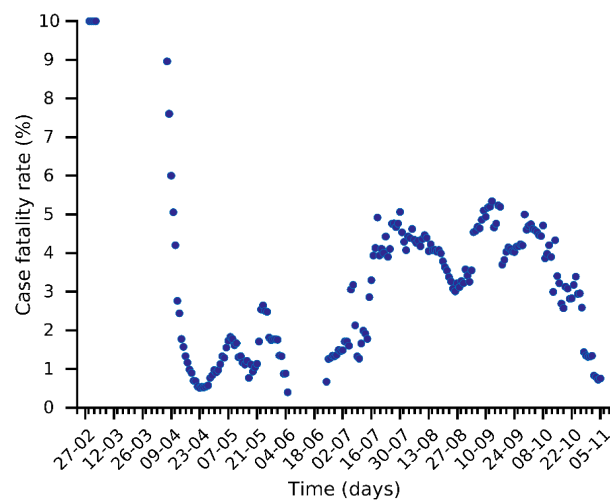
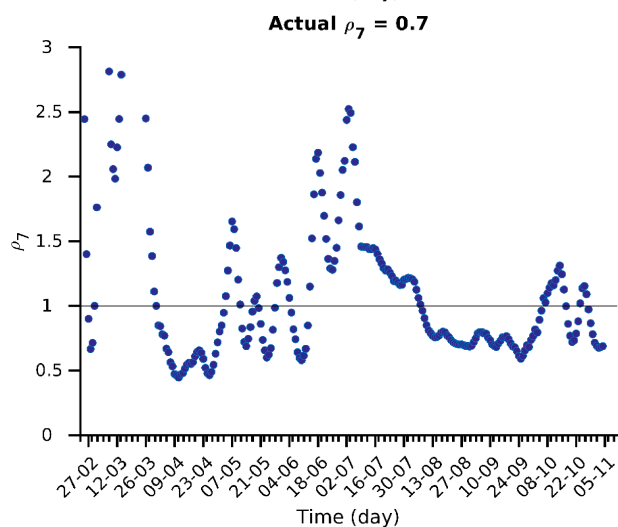
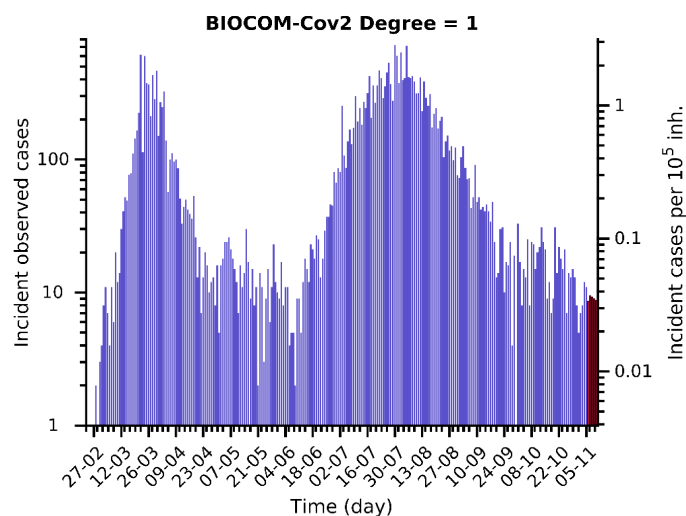
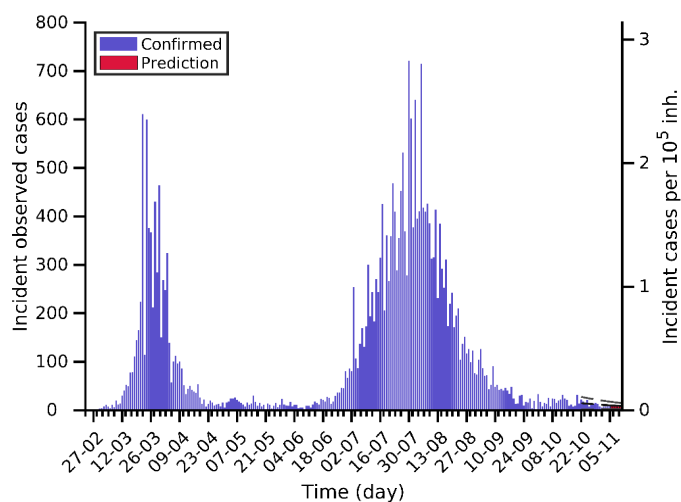


Predictions for next days

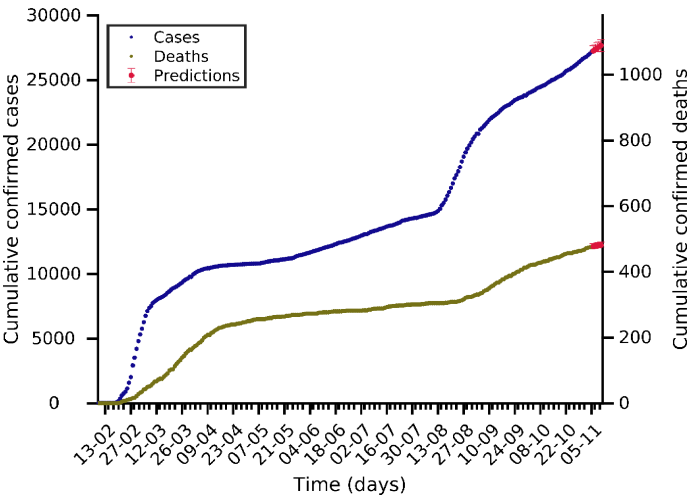
Day	Number of cases	95% Confidence Interval
06-11-2020	27642 (+9)	[27633 - 27673]
08-11-2020	27660 (+9)	[27633 - 27692]
10-11-2020	27678 (+9)	[27644 - 27712]

Current indicators

A ₁₄	EPG	CFR
1	0	0.75 %

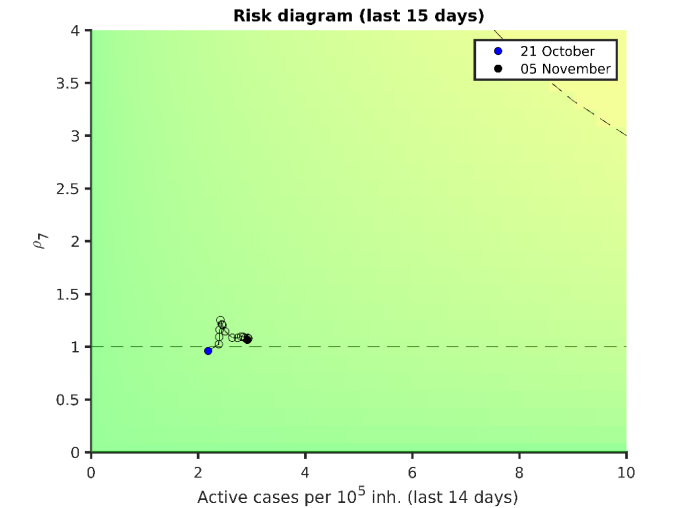
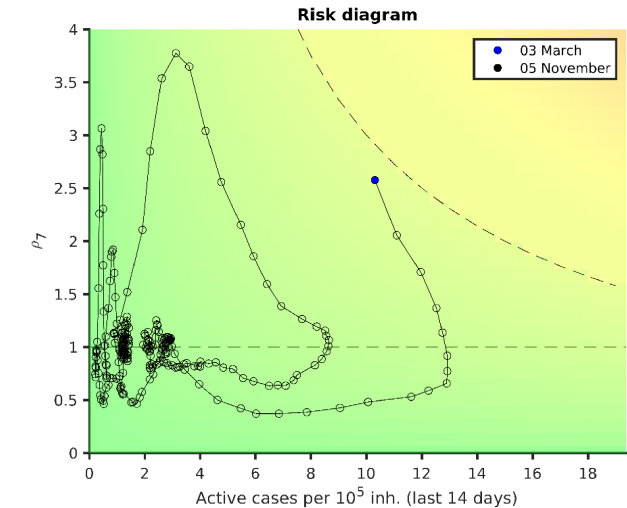
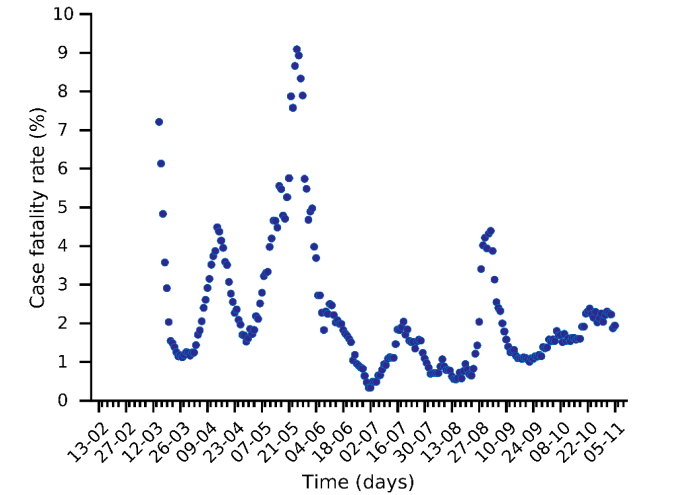
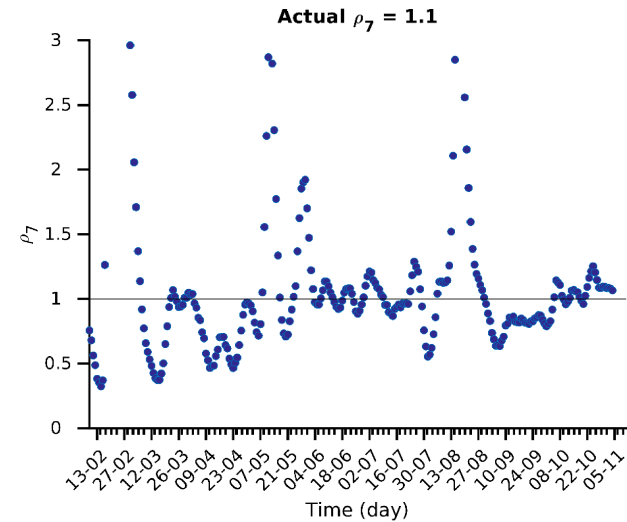
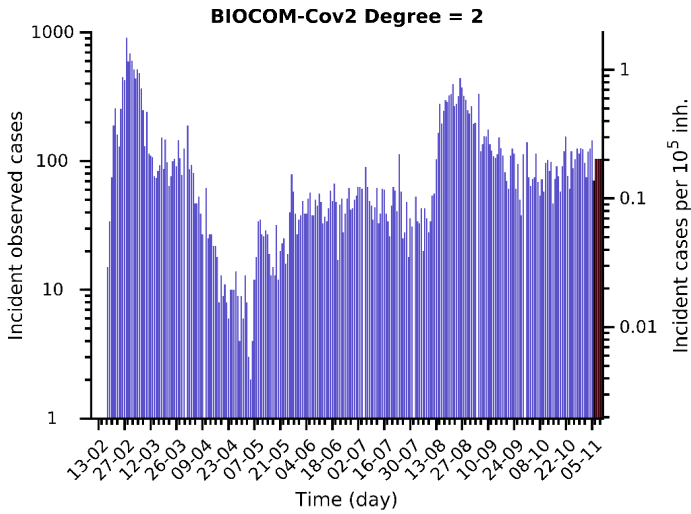
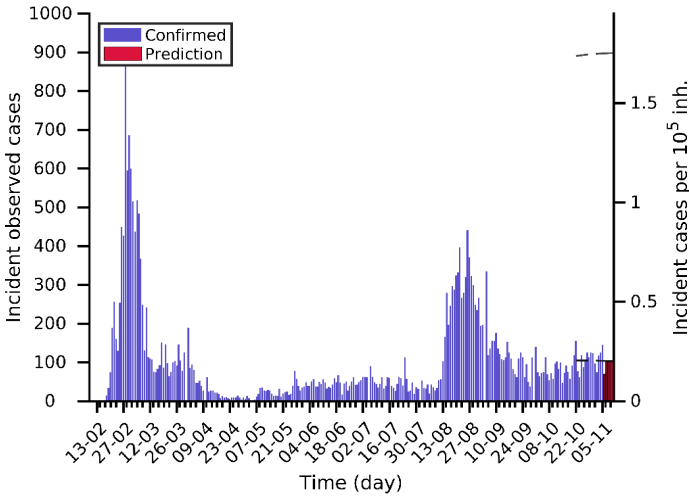


South Korea 05-11-2020. Pop: 51.3M. Cumulative incidence: 53/10⁵

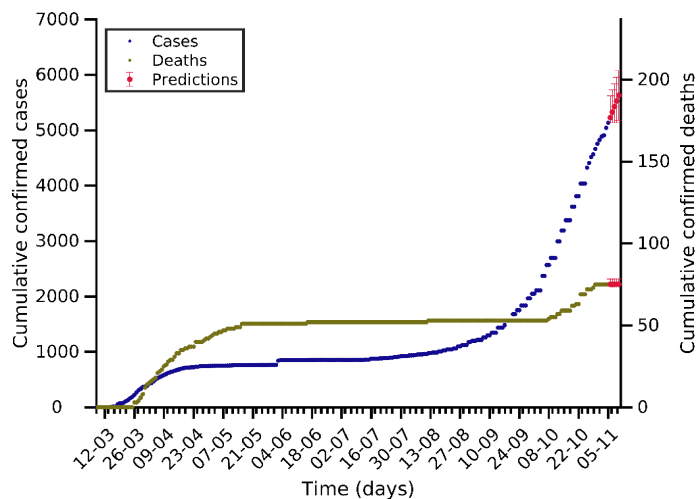


Predictions for next days		
Day	Number of cases	95% Confidence Interval
06-11-2020	27265 (+70)	[27195 - 27668]
08-11-2020	27473 (+104)	[27195 - 27891]
10-11-2020	27680 (+103)	[27228 - 28132]

Current indicators		
A ₁₄	EPG	CFR
3	3	1.94 %



Andorra 05-11-2020. Pop: 0.1M. Cumulative incidence: 6646/10⁵

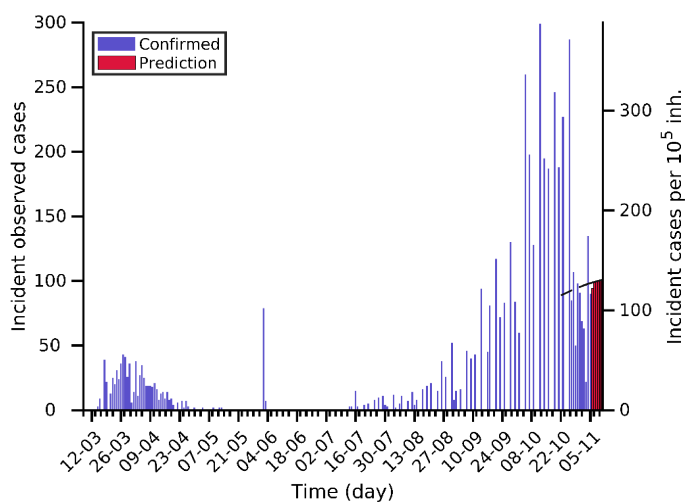


Predictions for next days

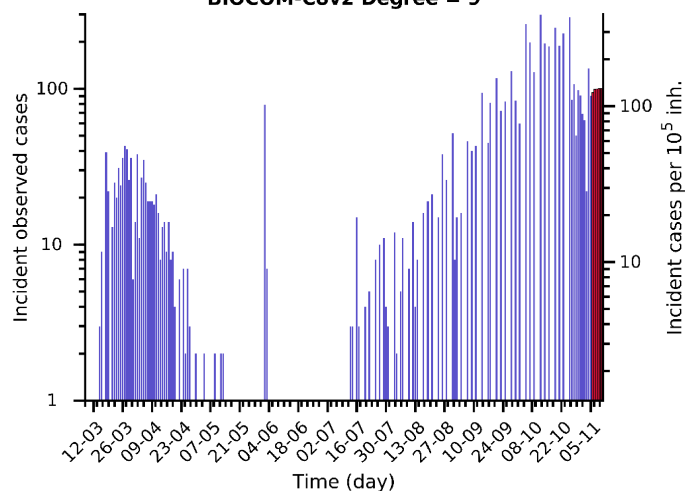
Day	Number of cases	95% Confidence Interval
06-11-2020	5229 (+94)	[5135 - 5623]
08-11-2020	5428 (+100)	[5135 - 5839]
10-11-2020	5629 (+101)	[5180 - 6078]

Current indicators

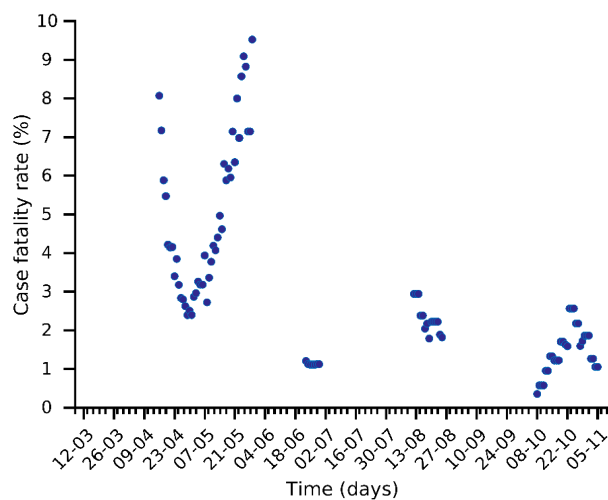
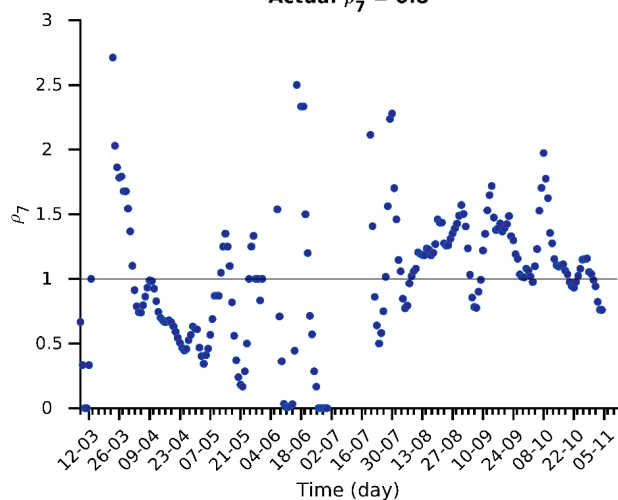
A ₁₄	EPG	CFR
1714	1302	1.05 %



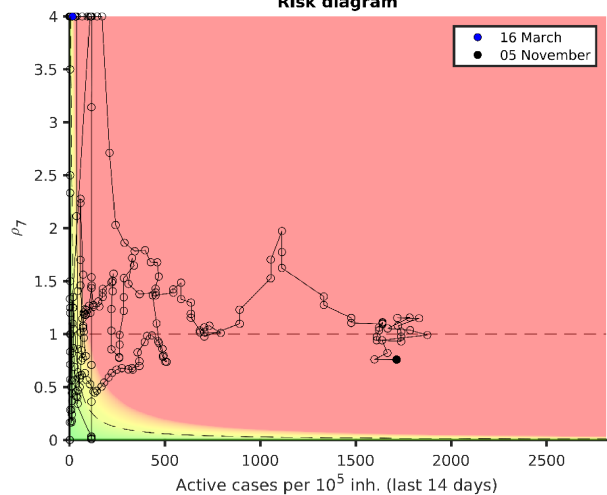
BIOCOM-Cov2 Degree = 9



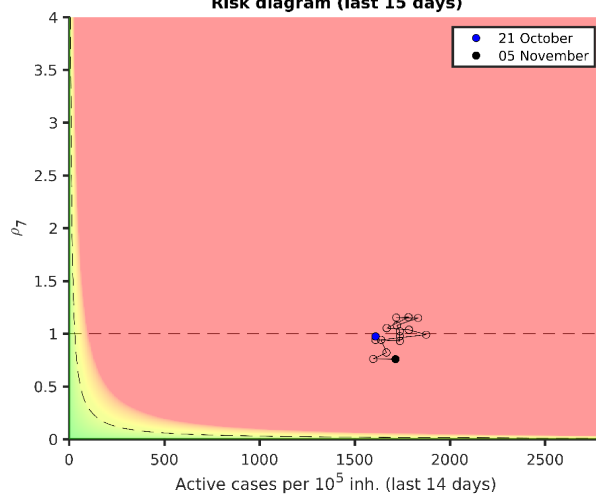
Actual $\rho_7 = 0.8$



Risk diagram

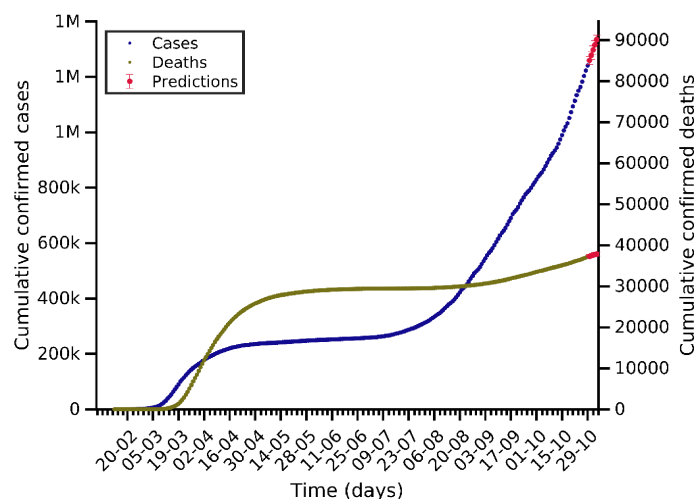


Risk diagram (last 15 days)



(3) Analysis and prediction of COVID-19 for Spain and its regions

Spain 29-10-2020. Pop: 47.0M. Cumulative incidence: 2639/10⁵

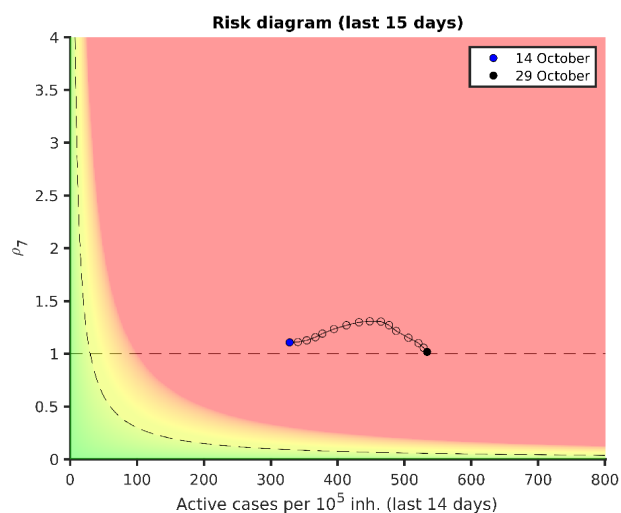
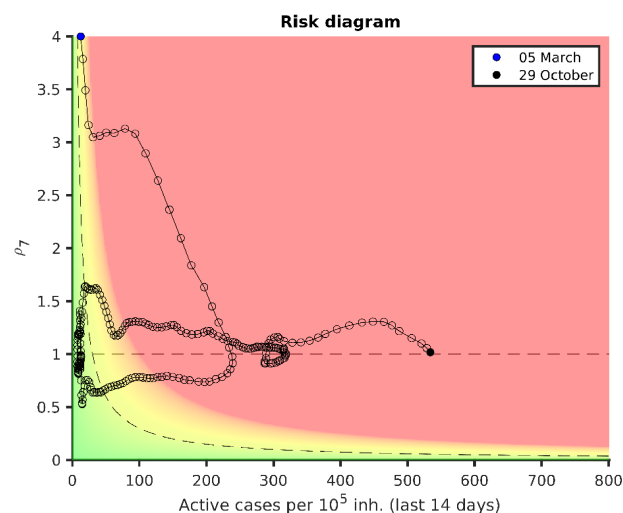
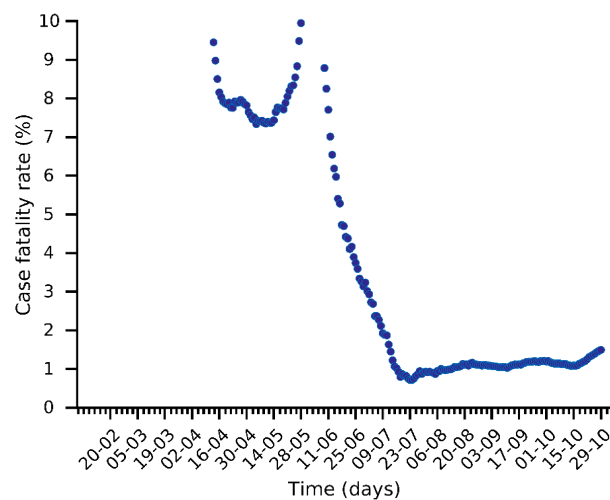
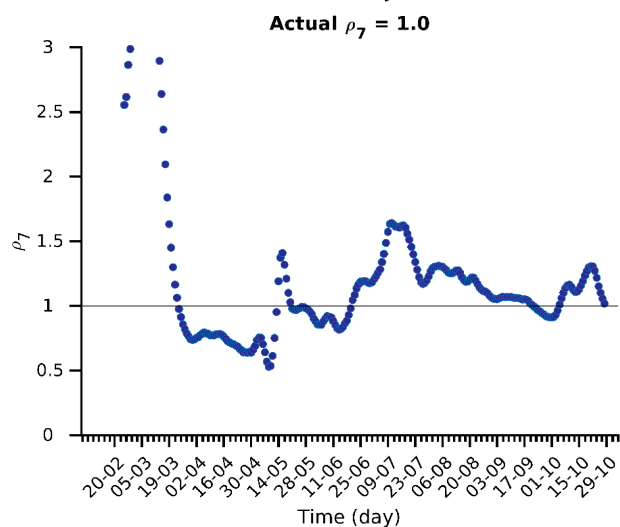
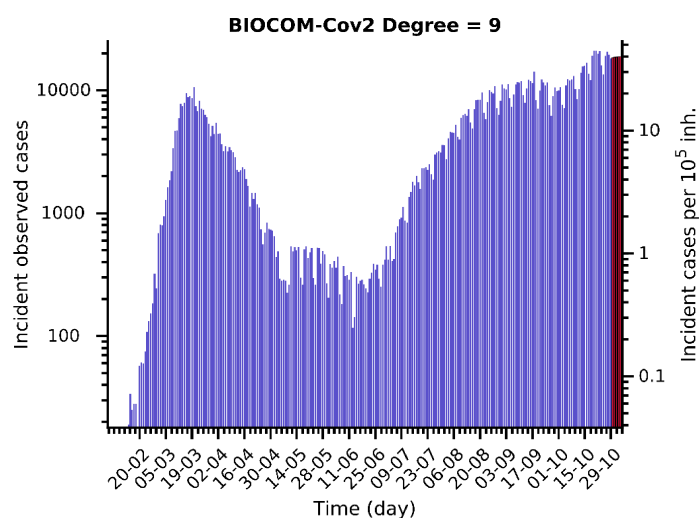
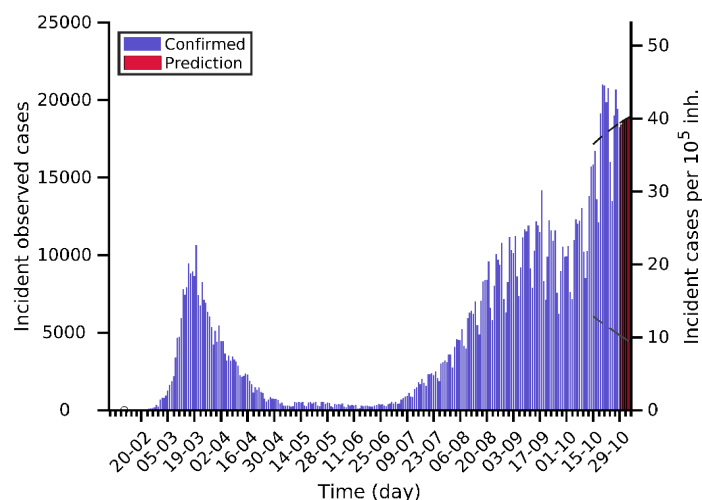


Predictions for next days

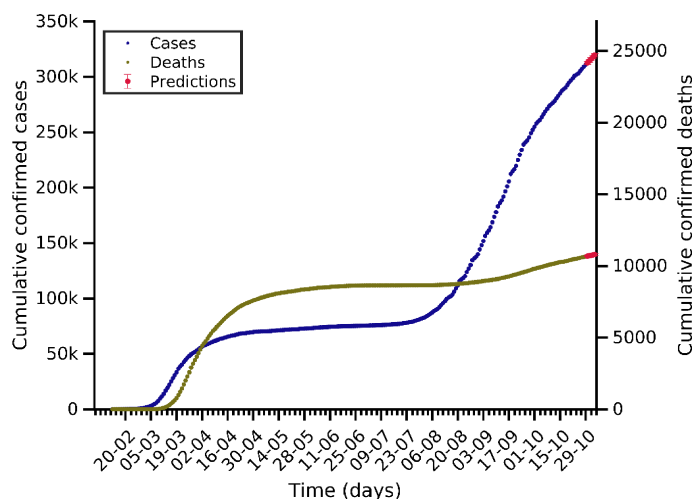
Day	Number of cases	95% Confidence Interval
30-10-2020	1259399 (+18409)	[1245026 - 1273772]
01-11-2020	1296814 (+18744)	[1281835 - 1311793]
03-11-2020	1334512 (+18883)	[1318204 - 1350820]

Current indicators

A ₁₄	EPG	CFR
534	544	1.49 %



Madrid 29-10-2020. Pop: 6.7M. Cumulative incidence: 4666/10⁵

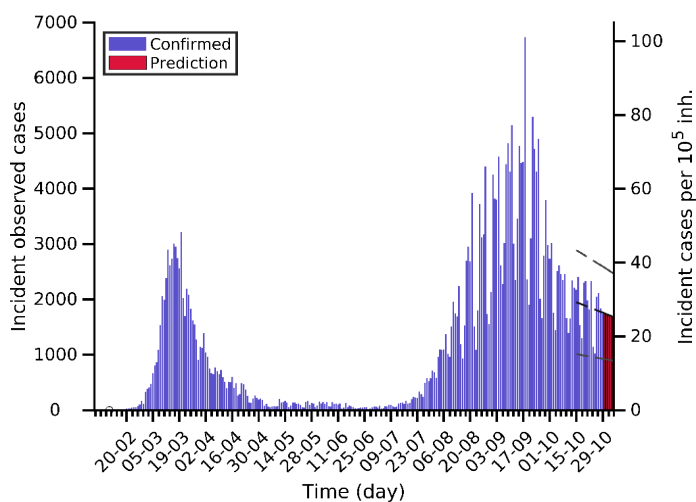


Predictions for next days

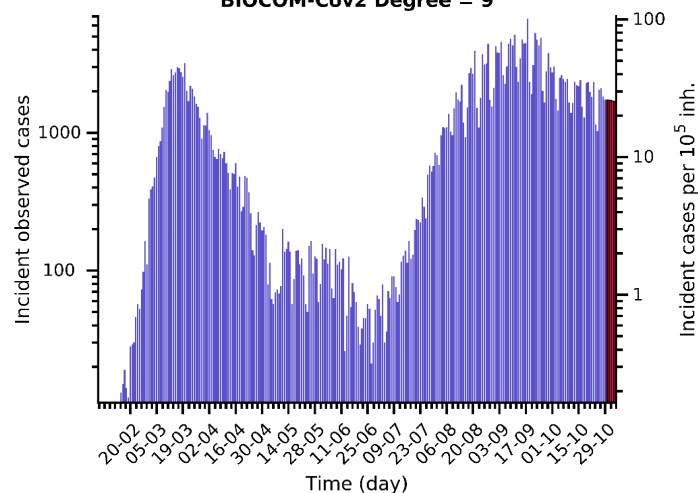
Day	Number of cases	95% Confidence Interval
30-10-2020	312679 (+1743)	[311351 - 314007]
01-11-2020	316134 (+1720)	[314757 - 317511]
03-11-2020	319533 (+1693)	[318053 - 321013]

Current indicators

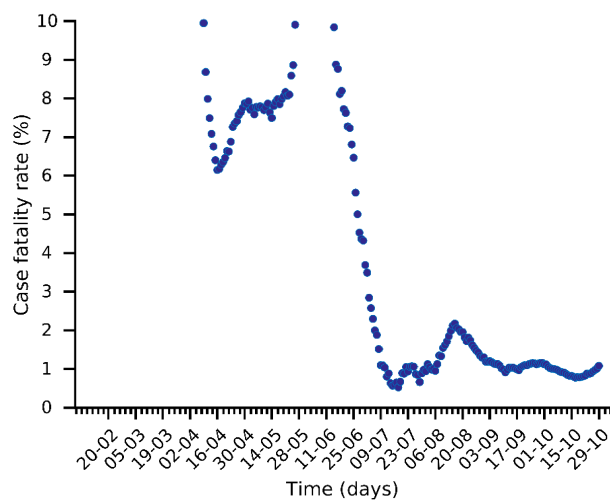
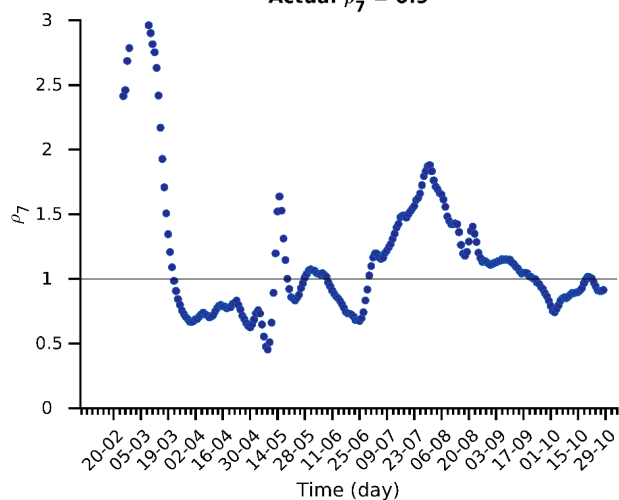
A ₁₄	EPG	CFR
389	356	1.08 %



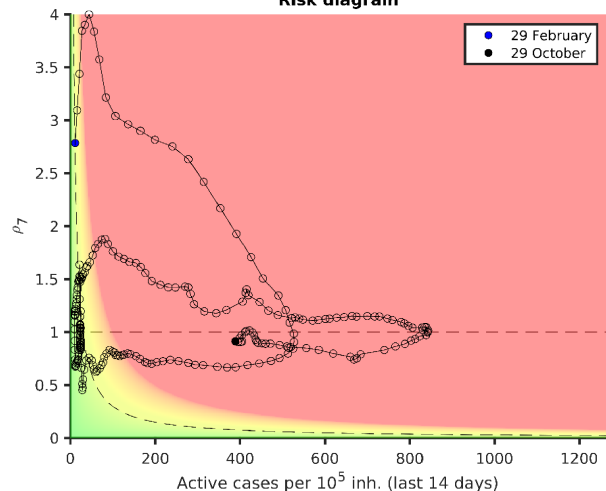
BIOCOM-Cov2 Degree = 9



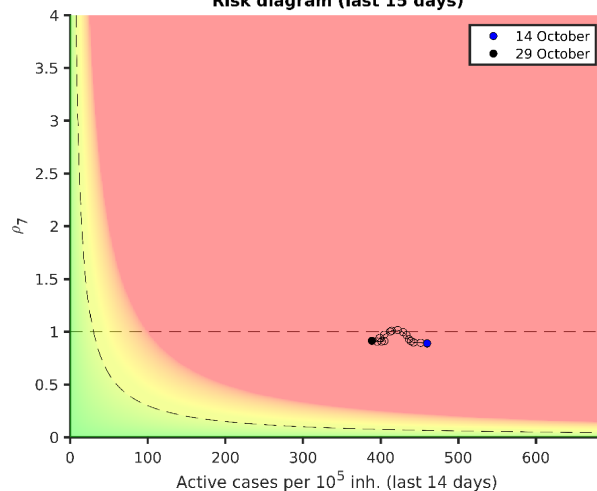
Actual $\rho_7 = 0.9$



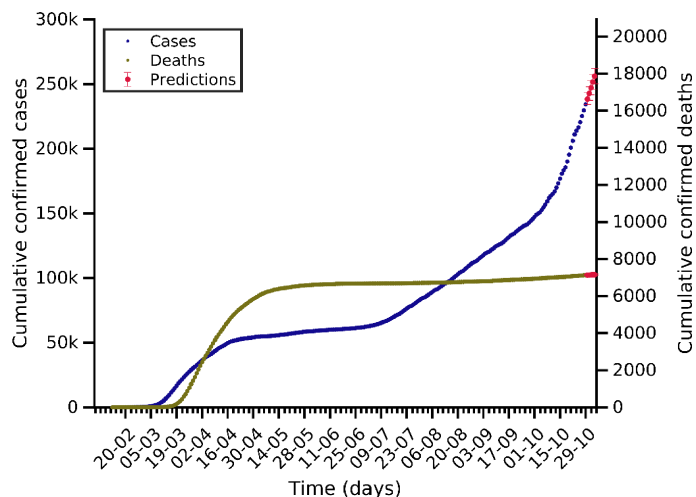
Risk diagram



Risk diagram (last 15 days)



Catalunya 29-10-2020. Pop: 7.7M. Cumulative incidence: 3053/10⁵

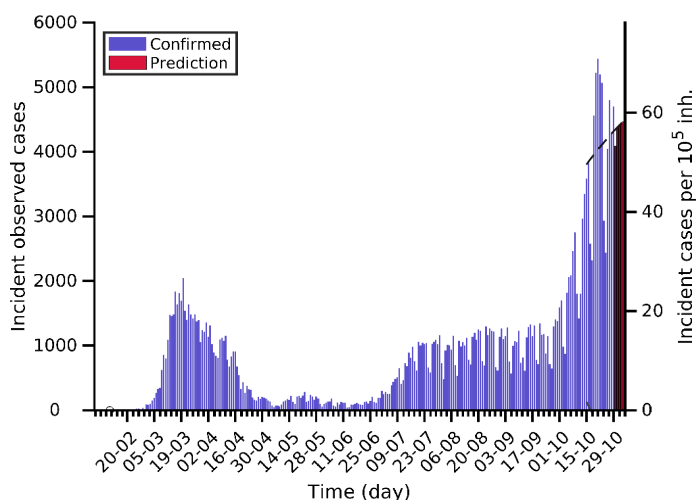


Predictions for next days

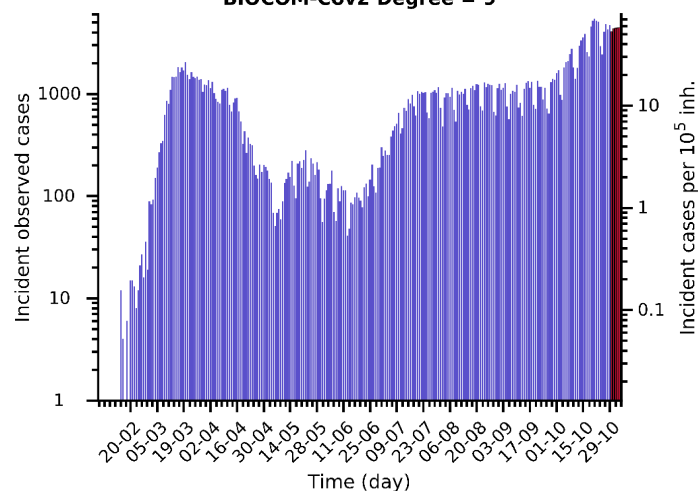
Day	Number of cases	95% Confidence Interval
30-10-2020	238424 (+4090)	[234334 - 243605]
01-11-2020	247208 (+4407)	[241801 - 252616]
03-11-2020	256112 (+4467)	[250201 - 262024]

Current indicators

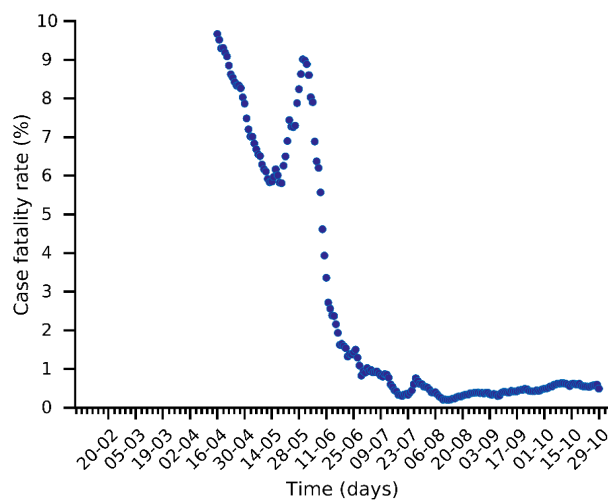
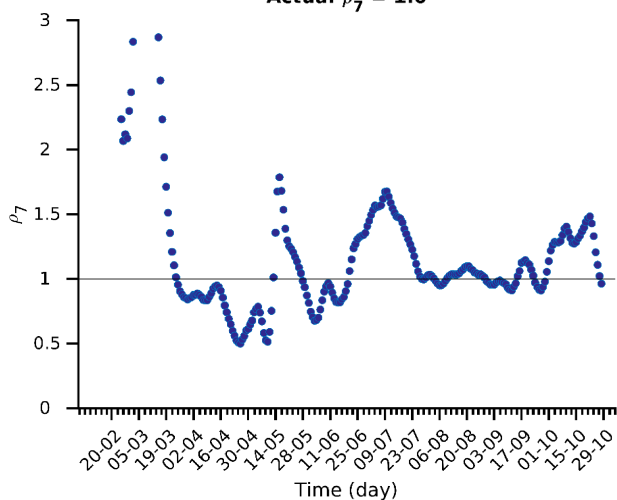
A ₁₄	EPG	CFR
749	721	0.49 %



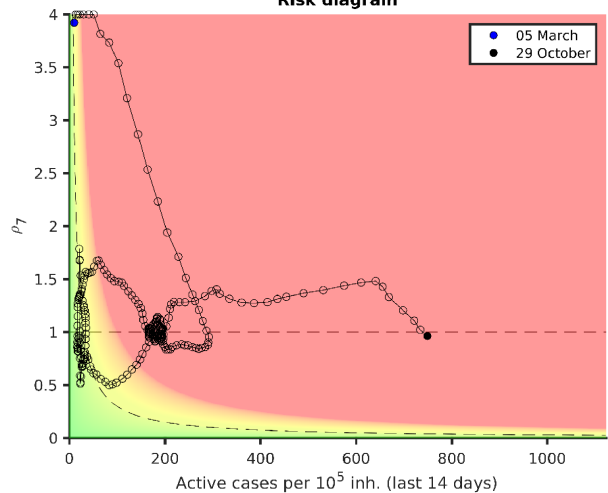
BIOCOM-Cov2 Degree = 9



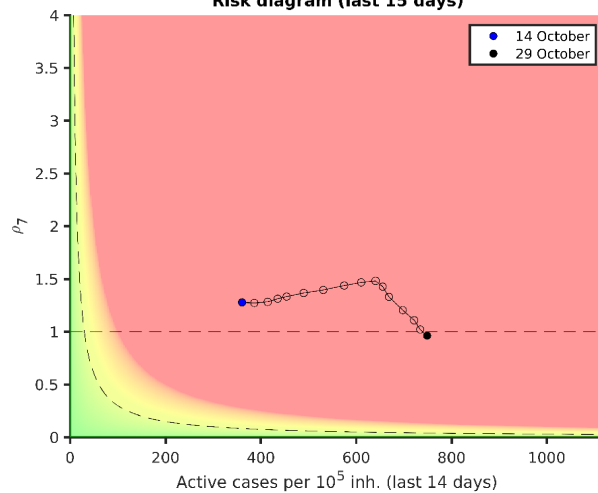
Actual $\rho_7 = 1.0$



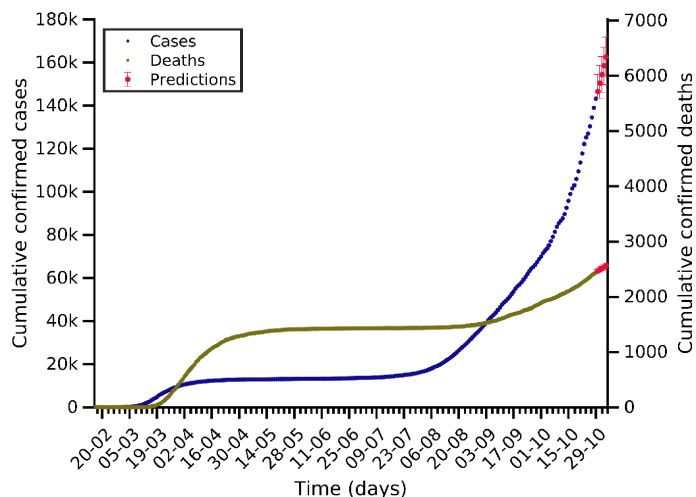
Risk diagram



Risk diagram (last 15 days)



Andalucia 29-10-2020. Pop: 8.4M. Cumulative incidence: 1703/10⁵

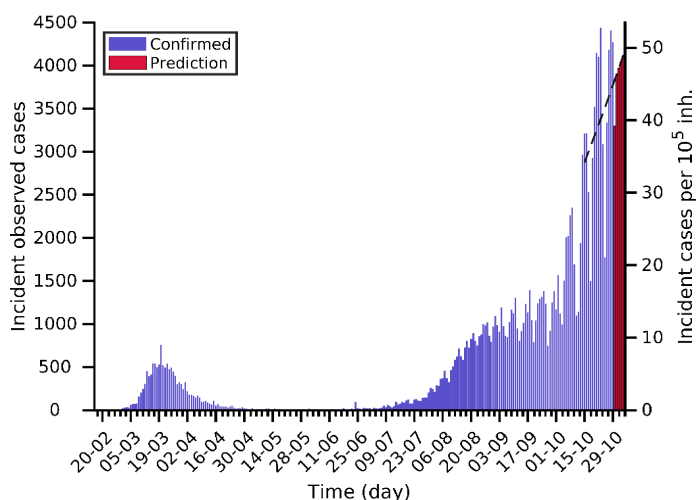


Predictions for next days

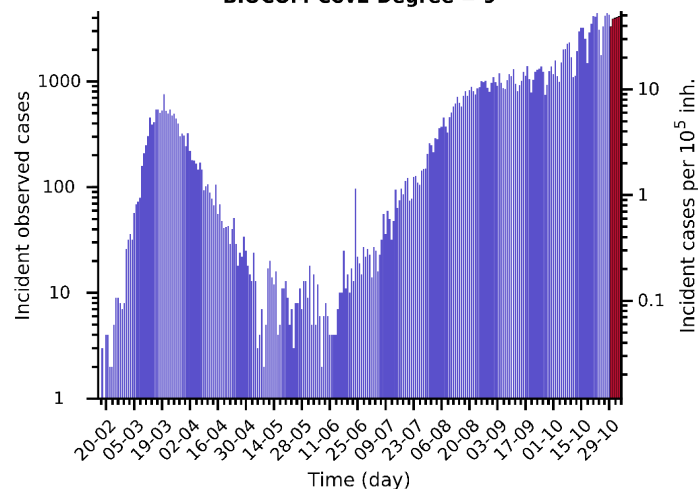
Day	Number of cases	95% Confidence Interval
30-10-2020	146565 (+3298)	[143267 - 154497]
01-11-2020	154442 (+3972)	[146126 - 162758]
03-11-2020	162586 (+4106)	[153380 - 171791]

Current indicators

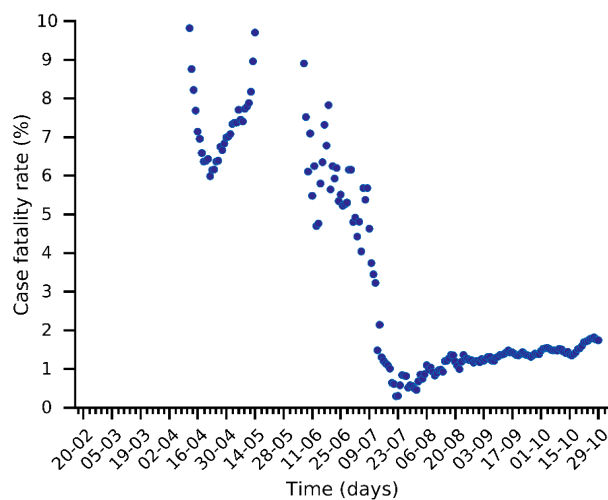
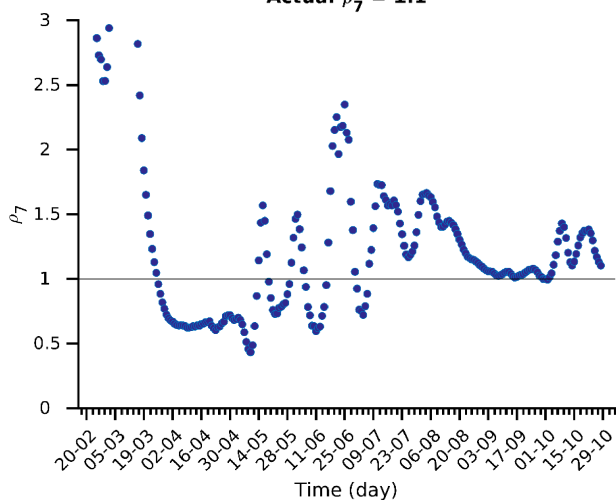
A ₁₄	EPG	CFR
564	622	1.74 %



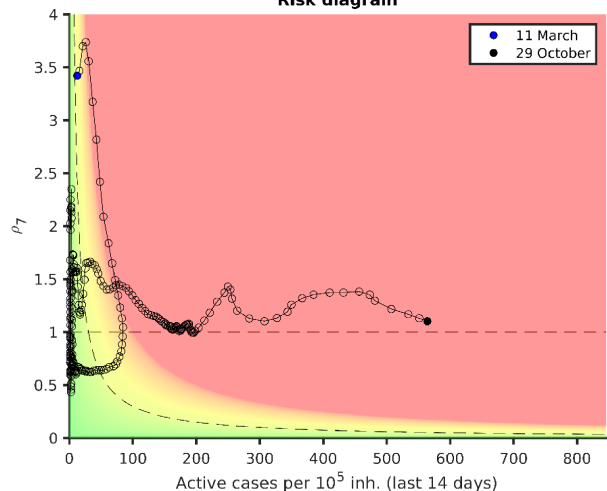
BIOCOM-Cov2 Degree = 9



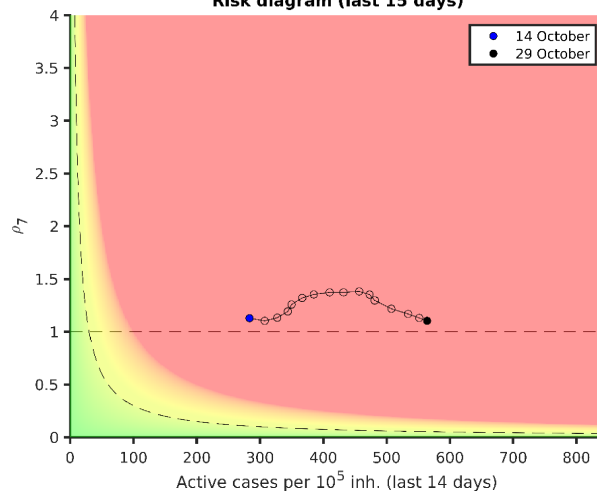
Actual $\rho_7 = 1.1$



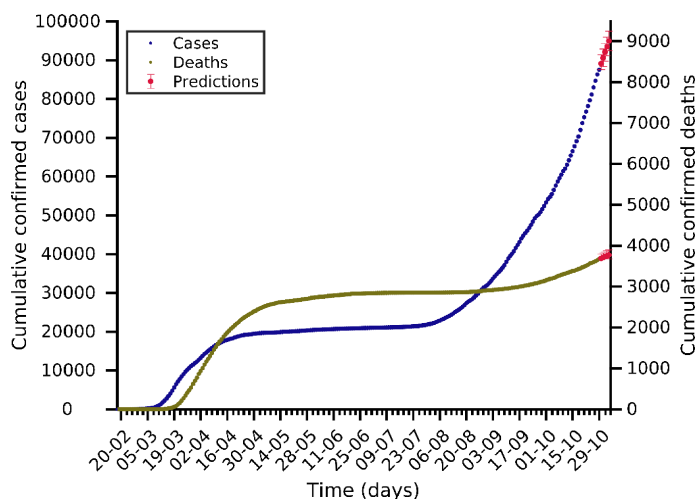
Risk diagram



Risk diagram (last 15 days)



Castilla Leon 29-10-2020. Pop: 2.4M. Cumulative incidence: 3649/10⁵

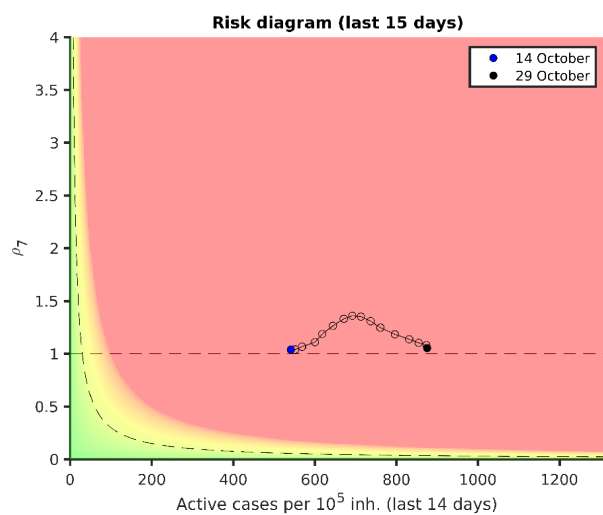
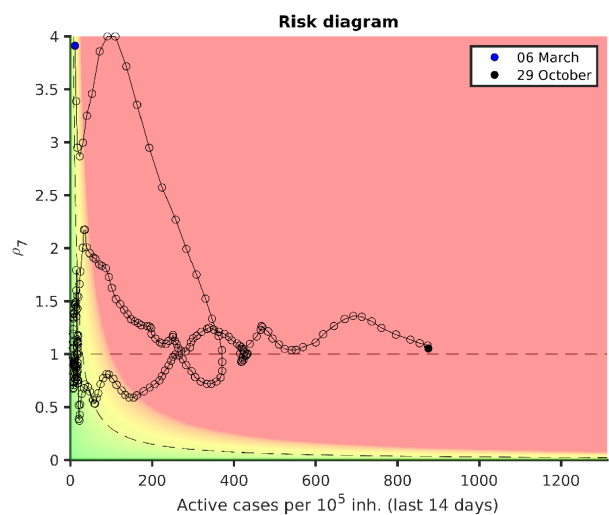
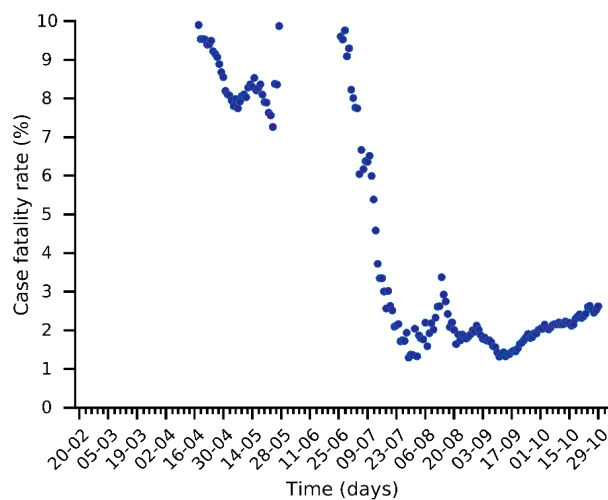
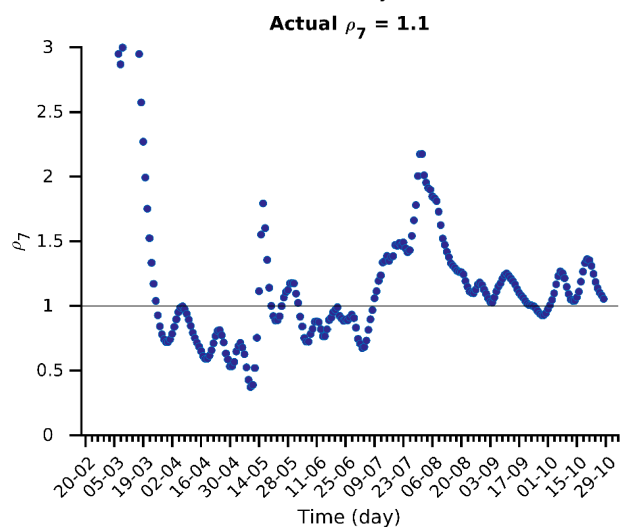
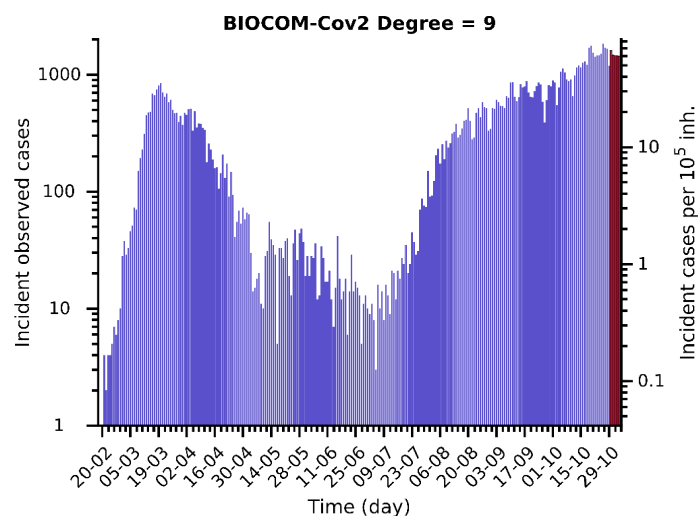
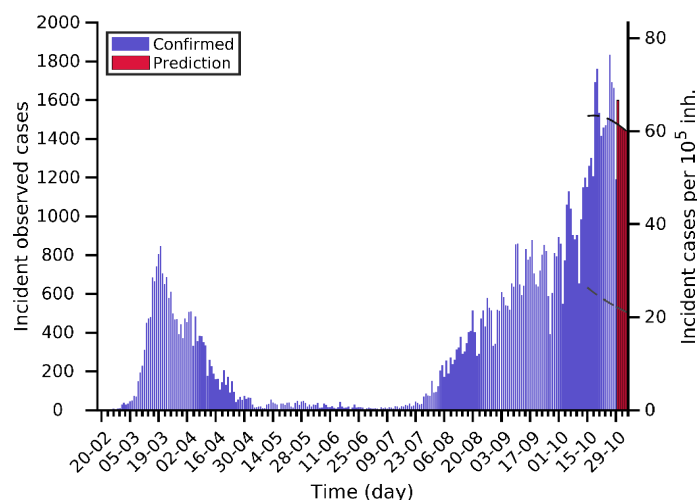


Predictions for next days

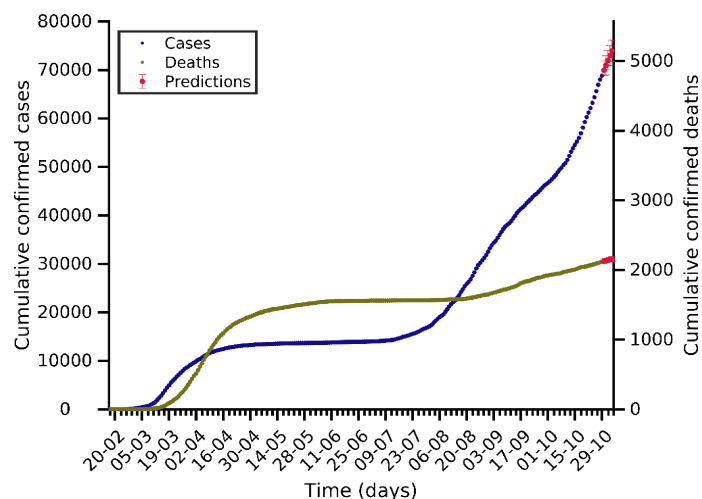
Day	Number of cases	95% Confidence Interval
30-10-2020	89159 (+1599)	[87560 - 91386]
01-11-2020	92086 (+1460)	[89771 - 94402]
03-11-2020	94980 (+1442)	[92476 - 97484]

Current indicators

A ₁₄	EPG	CFR
875	922	2.62 %



Euskadi 29-10-2020. Pop: 2.2M. Cumulative incidence: 3118/10⁵

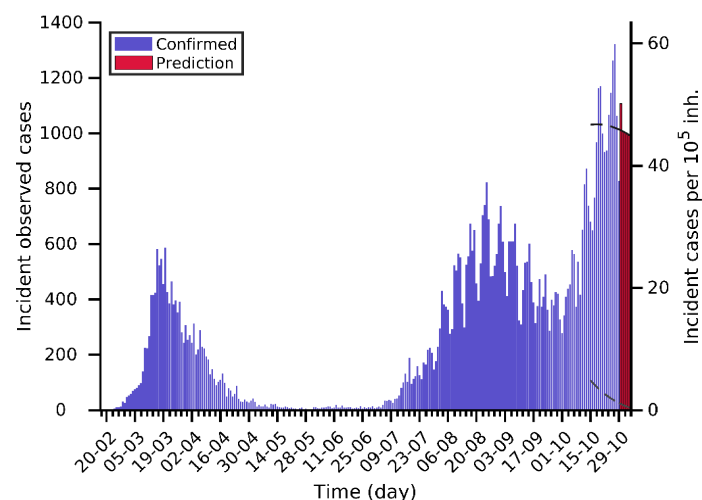


Predictions for next days

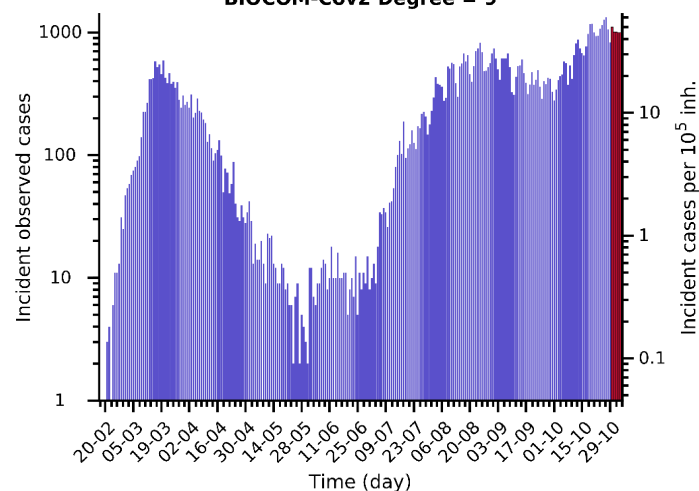
Day	Number of cases	95% Confidence Interval
30-10-2020	69942 (+1107)	[68835 - 71866]
01-11-2020	71952 (+1003)	[69951 - 73953]
03-11-2020	73945 (+995)	[71780 - 76110]

Current indicators

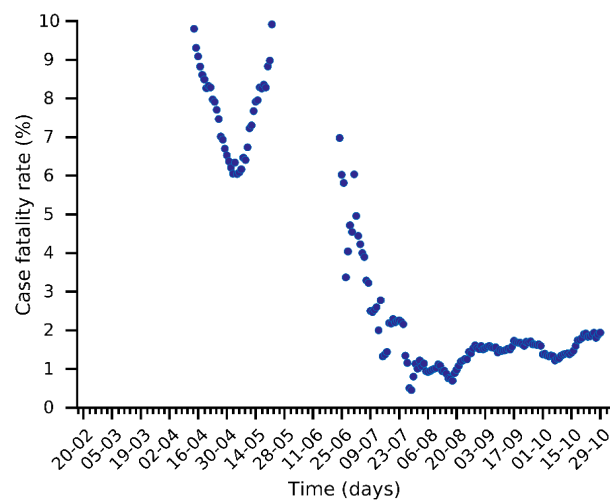
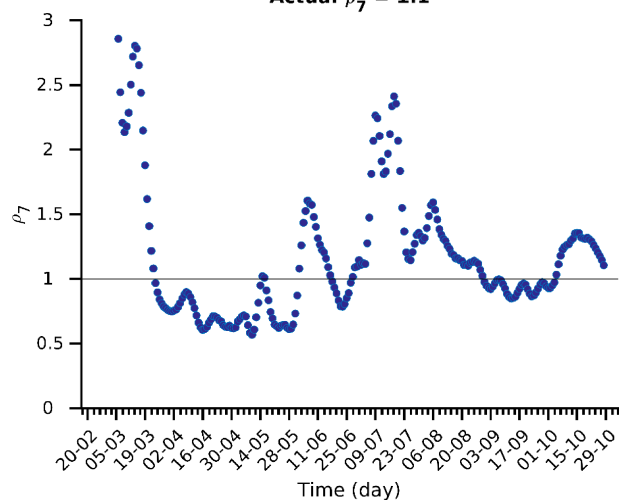
A ₁₄	EPG	CFR
647	715	1.94 %



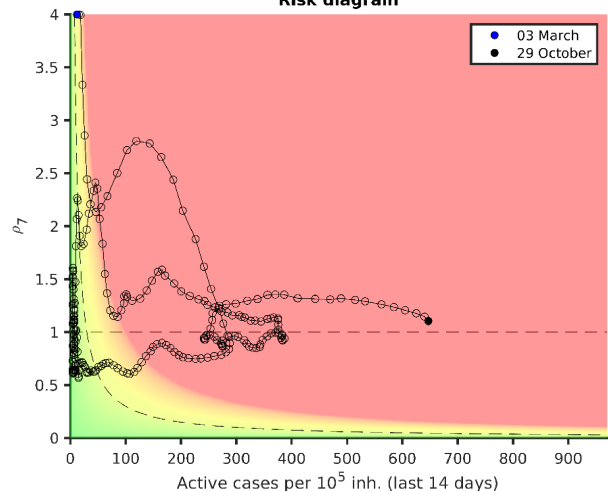
BIOCOM-Cov2 Degree = 9



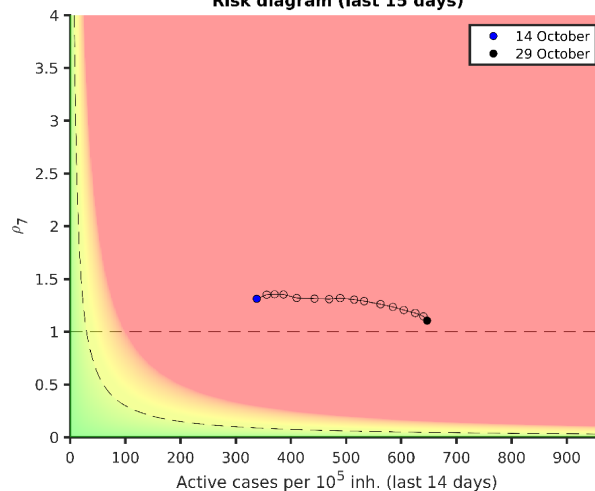
Actual $\rho_7 = 1.1$



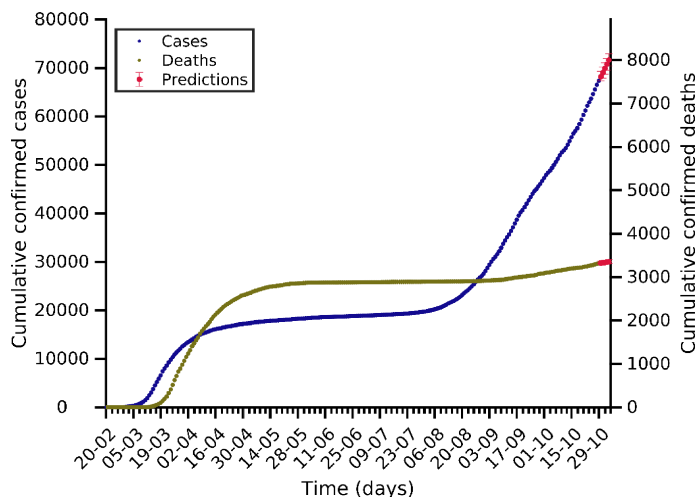
Risk diagram



Risk diagram (last 15 days)



Castilla-La Mancha 29-10-2020. Pop: 2.0M. Cumulative incidence: 3312/10⁵

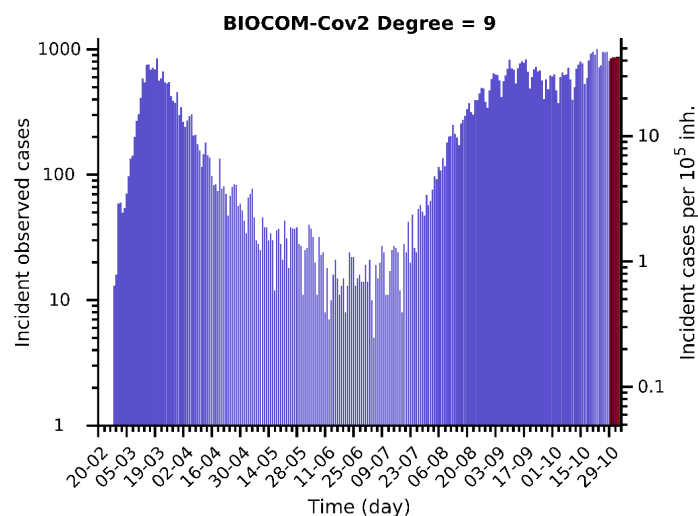
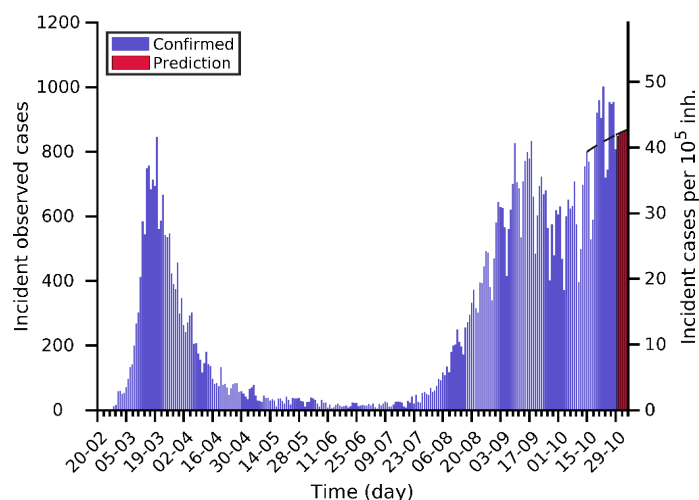


Predictions for next days

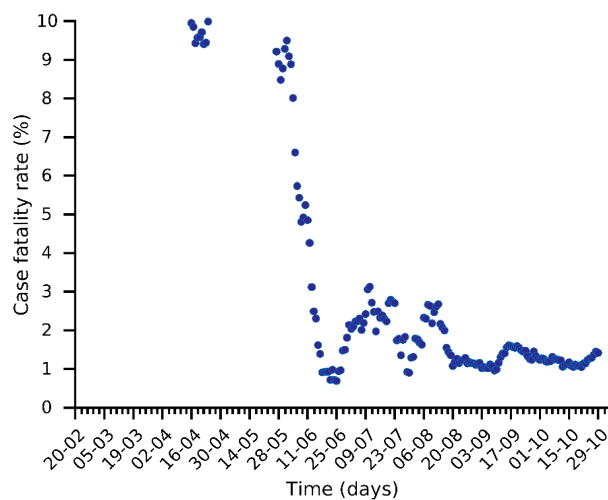
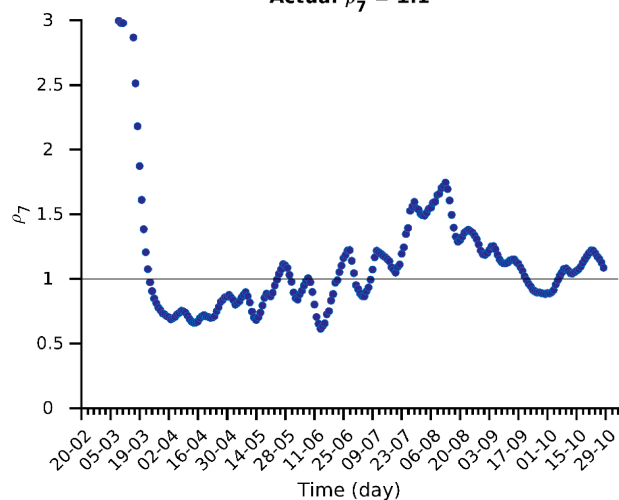
Day	Number of cases	95% Confidence Interval
30-10-2020	68182 (+847)	[67335 - 69290]
01-11-2020	69901 (+861)	[68746 - 71055]
03-11-2020	71631 (+866)	[70376 - 72886]

Current indicators

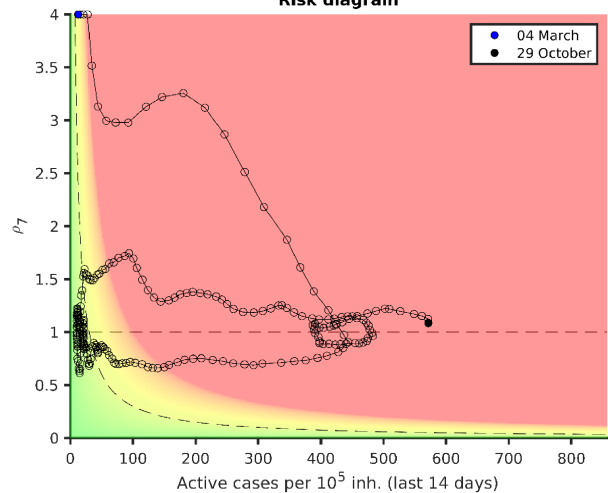
A ₁₄	EPG	CFR
571	621	1.42 %



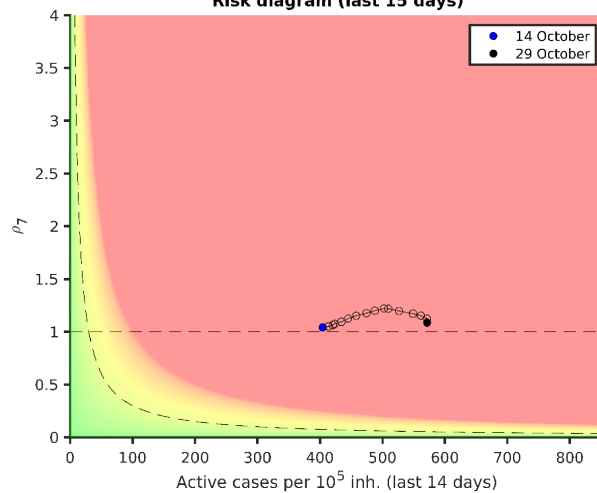
Actual $\rho_7 = 1.1$



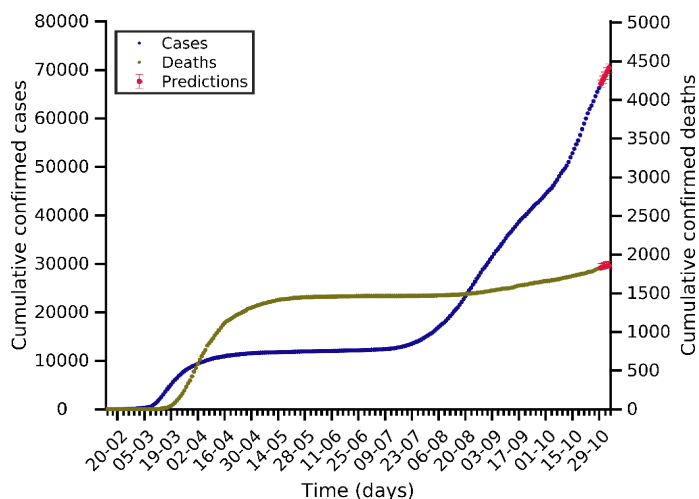
Risk diagram



Risk diagram (last 15 days)



C Valenciana 29-10-2020. Pop: 5.0M. Cumulative incidence: 1325/10⁵

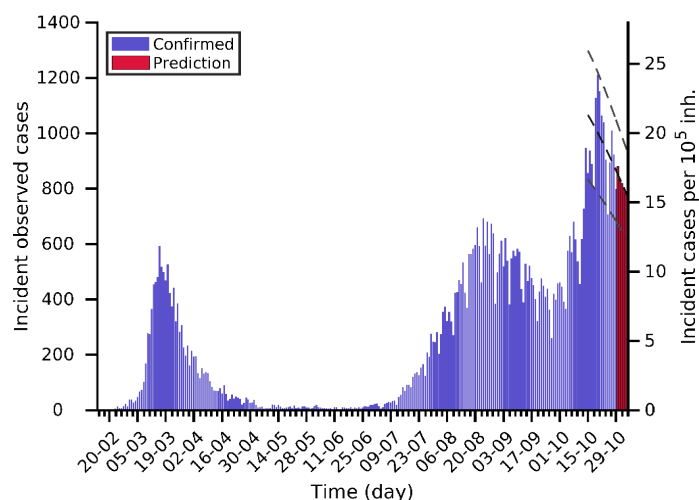


Predictions for next days

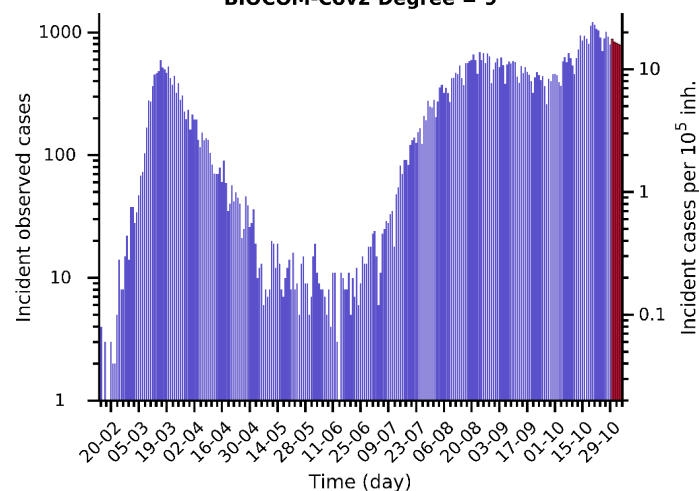
Day	Number of cases	95% Confidence Interval
30-10-2020	67169 (+880)	[66411 - 67927]
01-11-2020	68823 (+819)	[68038 - 69608]
03-11-2020	70413 (+787)	[69573 - 71252]

Current indicators

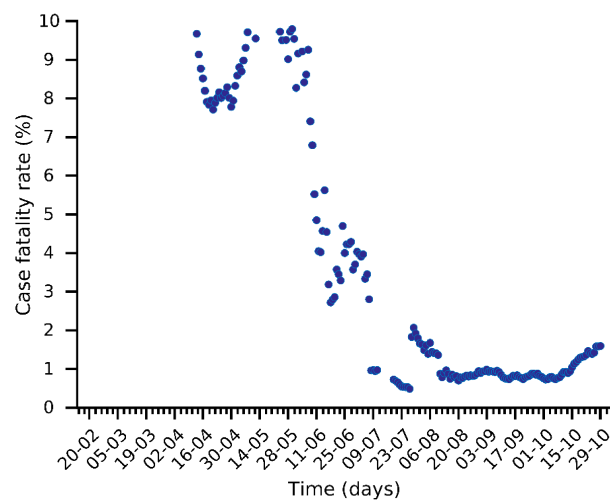
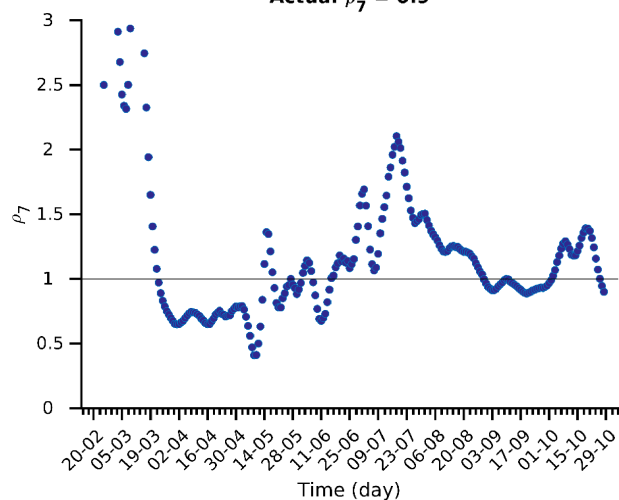
A ₁₄	EPG	CFR
269	242	1.59 %



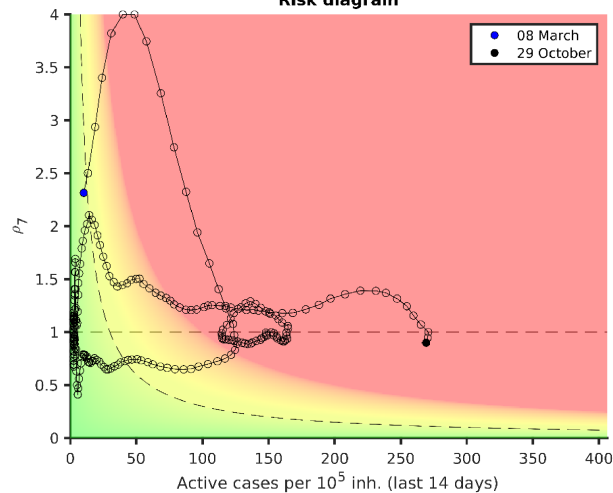
BIOCOM-Cov2 Degree = 9



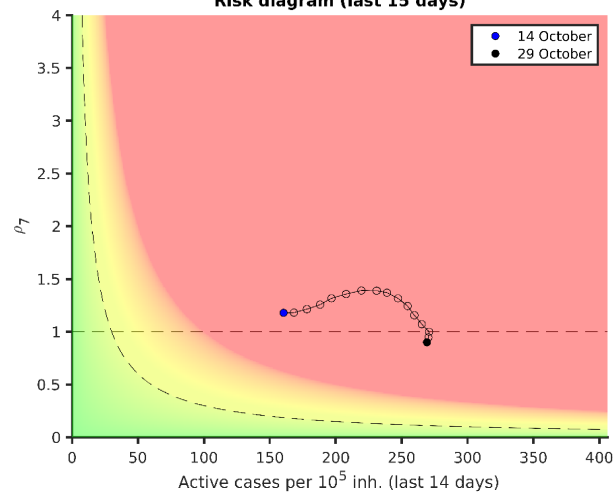
Actual $\rho_7 = 0.9$



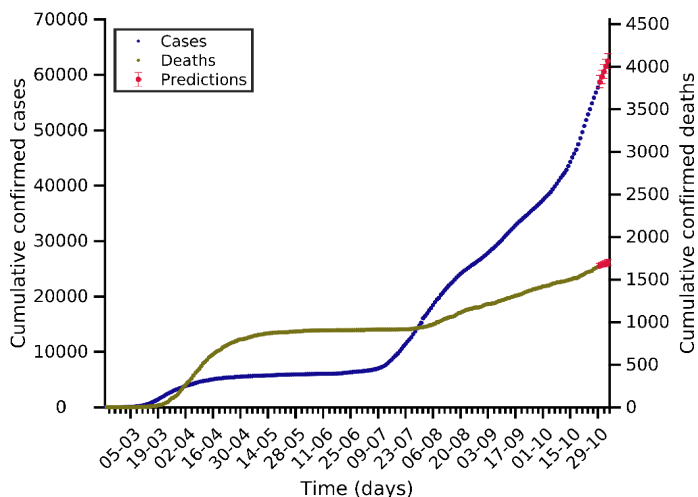
Risk diagram



Risk diagram (last 15 days)



Aragon 29-10-2020. Pop: 1.3M. Cumulative incidence: 4374/10⁵

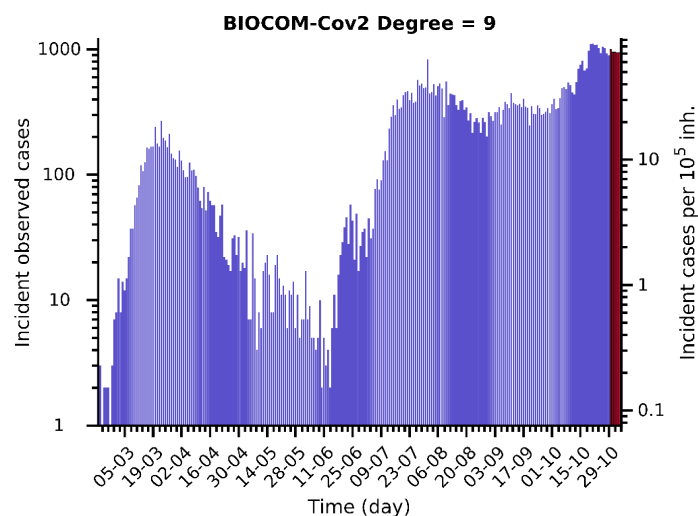
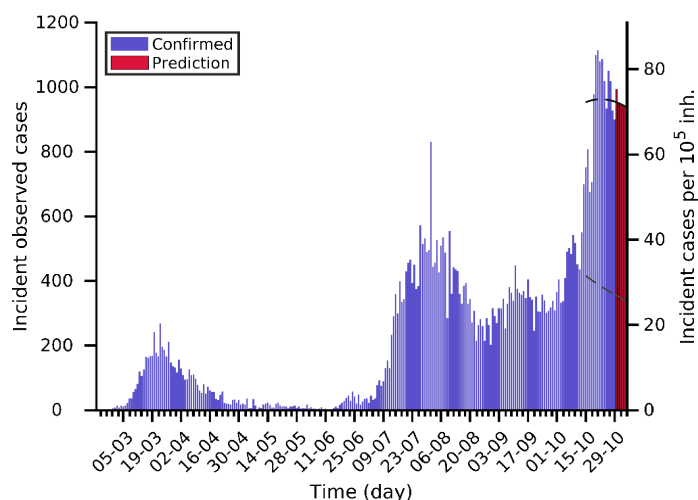


Predictions for next days

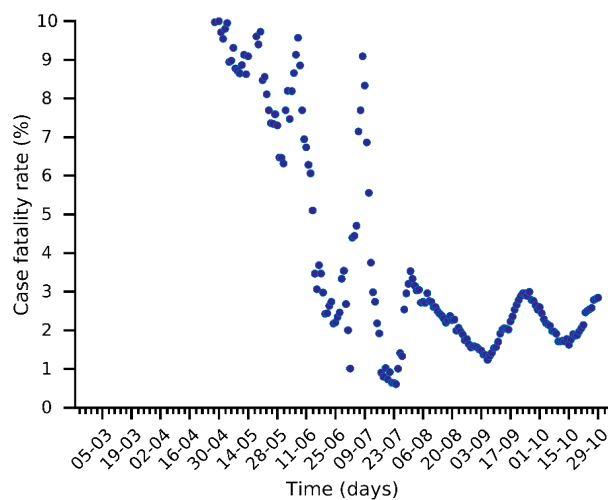
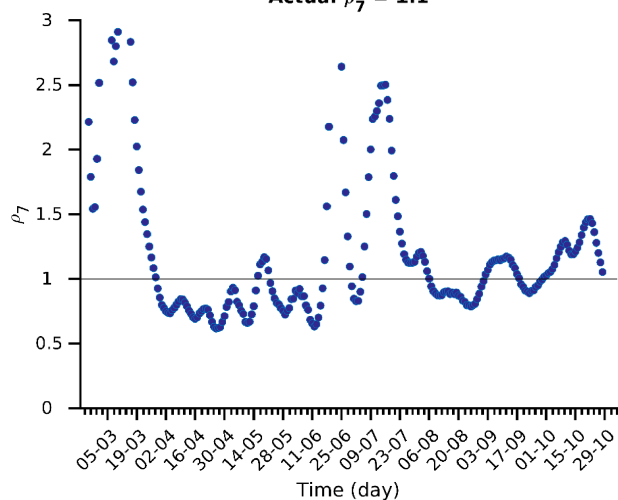
Day	Number of cases	95% Confidence Interval
30-10-2020	58701 (+994)	[57707 - 59901]
01-11-2020	60599 (+948)	[59350 - 61848]
03-11-2020	62485 (+941)	[61131 - 63838]

Current indicators

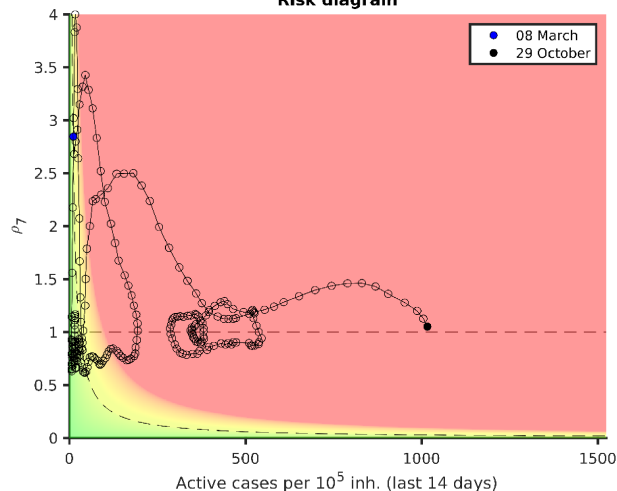
A ₁₄	EPG	CFR
1016	1069	2.84 %



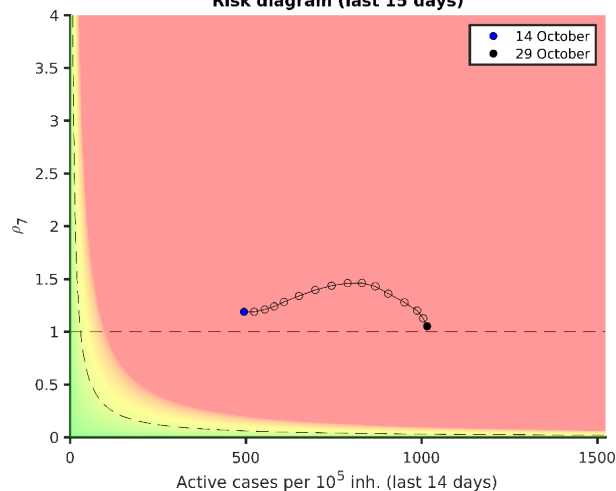
Actual $\rho_7 = 1.1$



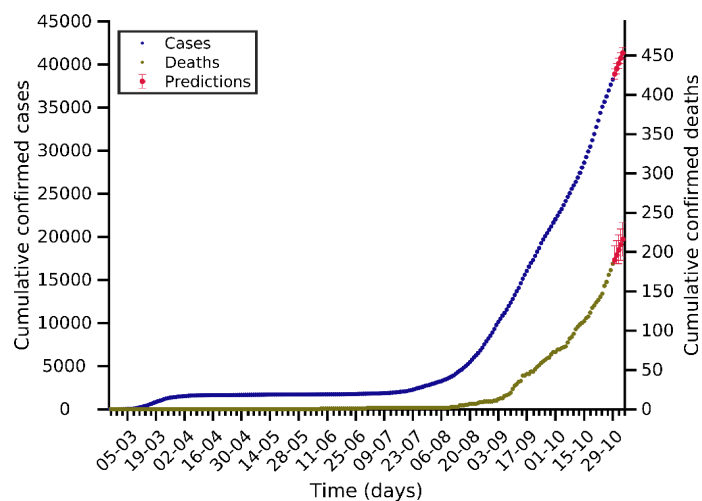
Risk diagram



Risk diagram (last 15 days)



Murcia 29-10-2020. Pop: 1.5M. Cumulative incidence: 2561/10⁵

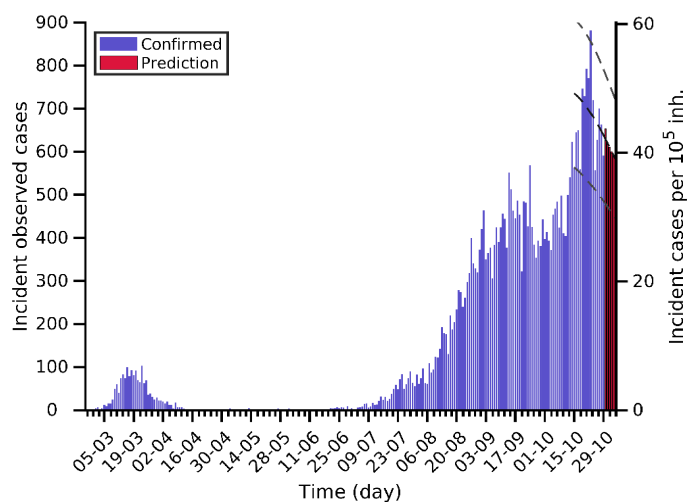


Predictions for next days

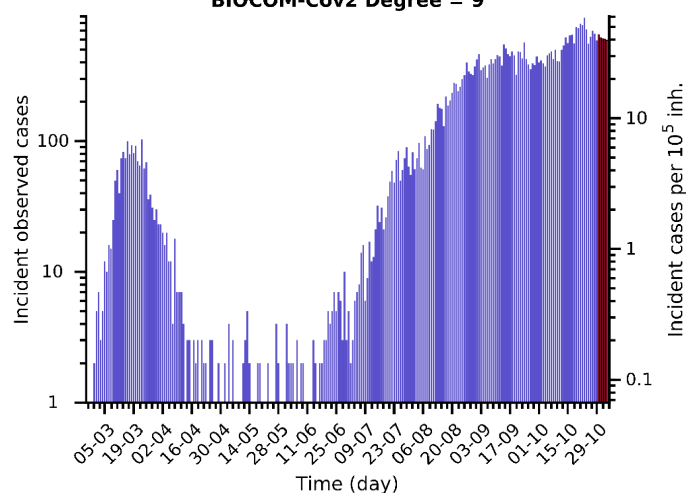
Day	Number of cases	95% Confidence Interval
30-10-2020	38909 (+654)	[38317 - 39500]
01-11-2020	40139 (+610)	[39526 - 40752]
03-11-2020	41330 (+591)	[40672 - 41989]

Current indicators

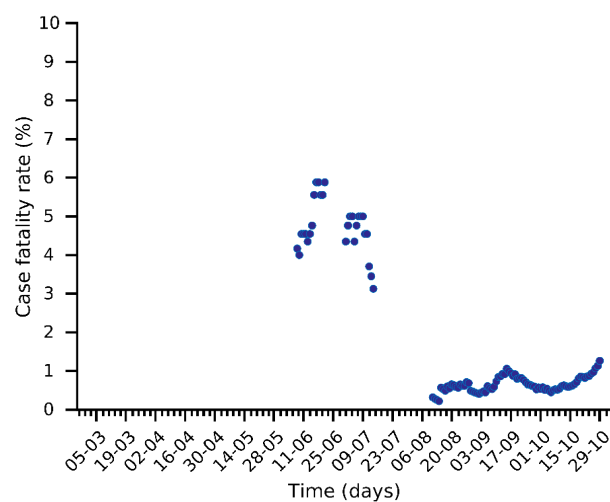
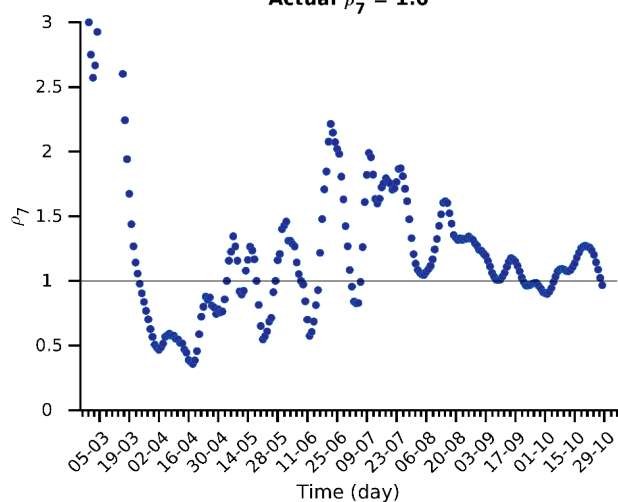
A ₁₄	EPG	CFR
645	624	1.26 %



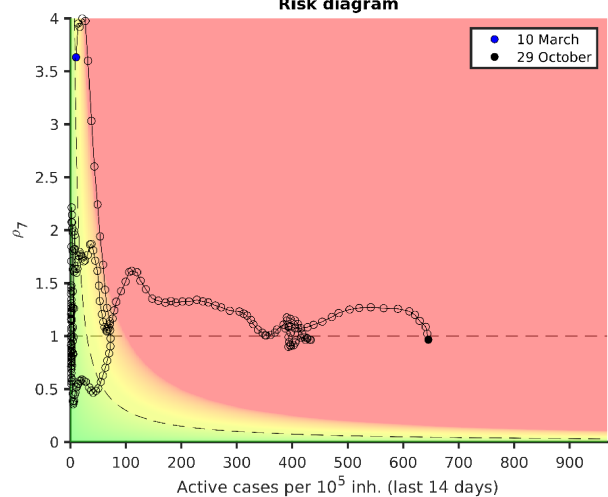
BIOCOM-Cov2 Degree = 9



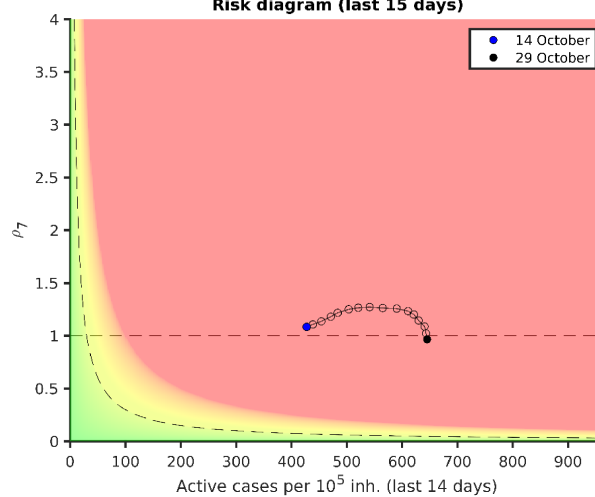
Actual $\rho_7 = 1.0$



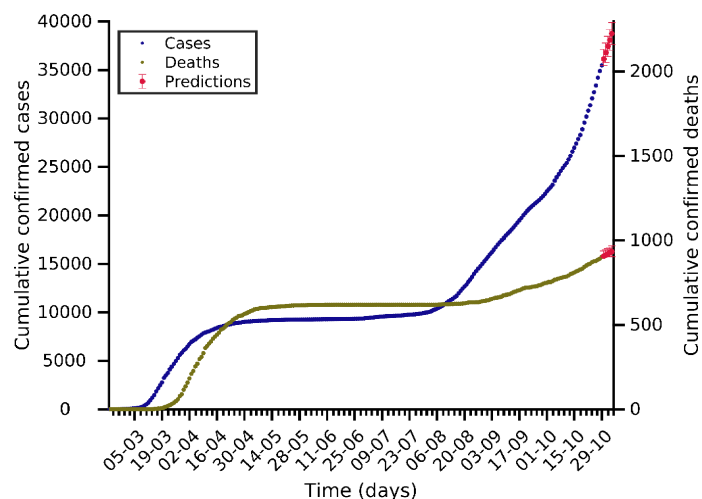
Risk diagram



Risk diagram (last 15 days)



Galicia 29-10-2020. Pop: 2.7M. Cumulative incidence: 1314/10⁵

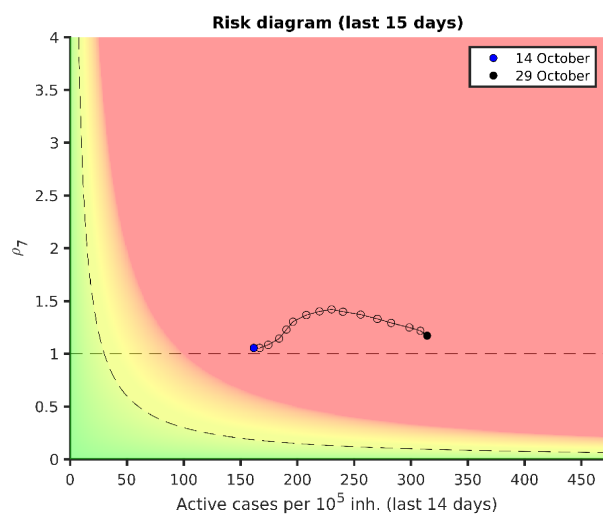
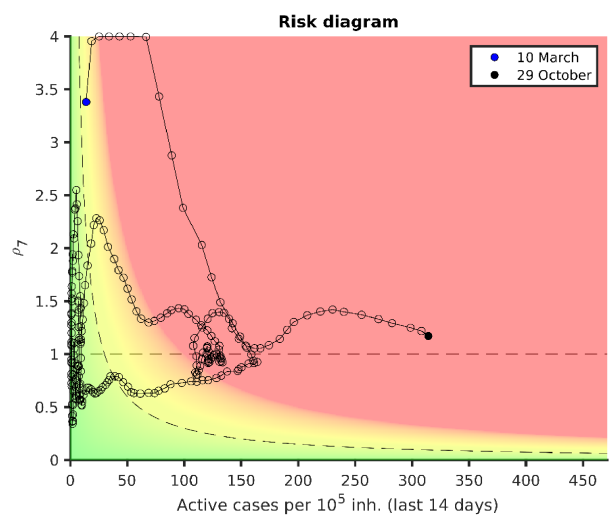
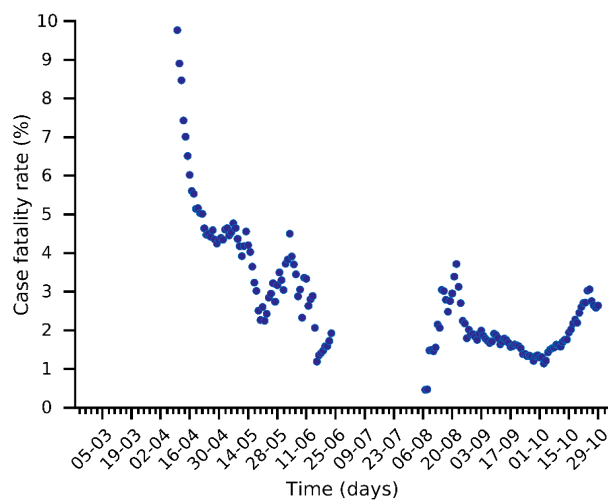
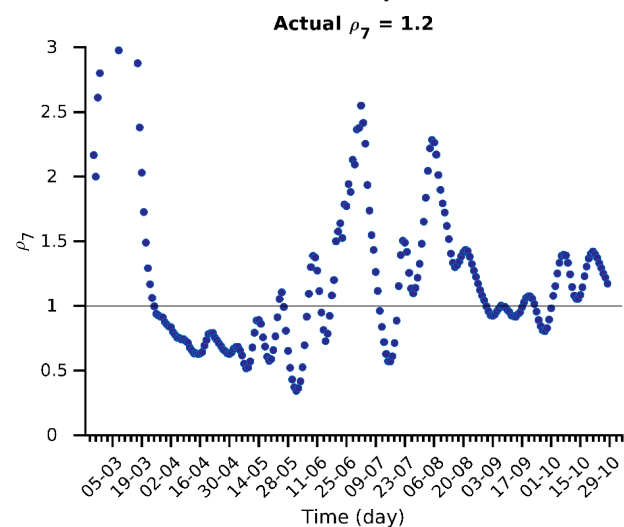
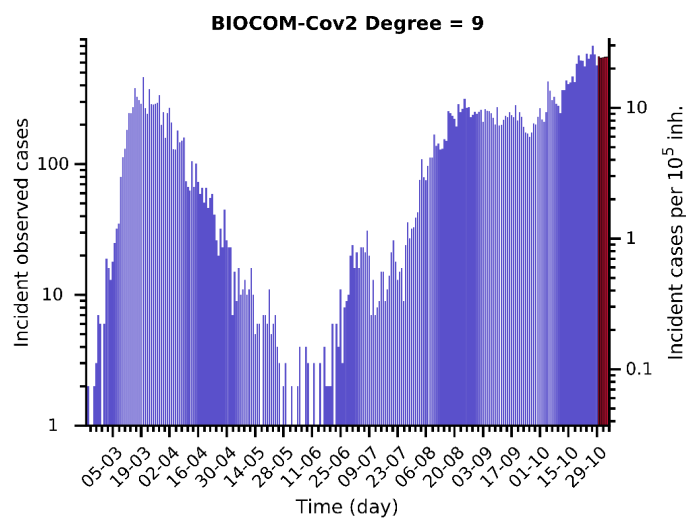
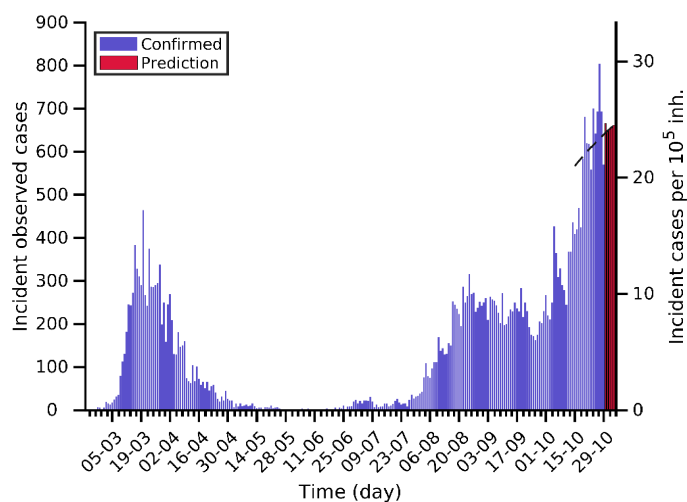


Predictions for next days

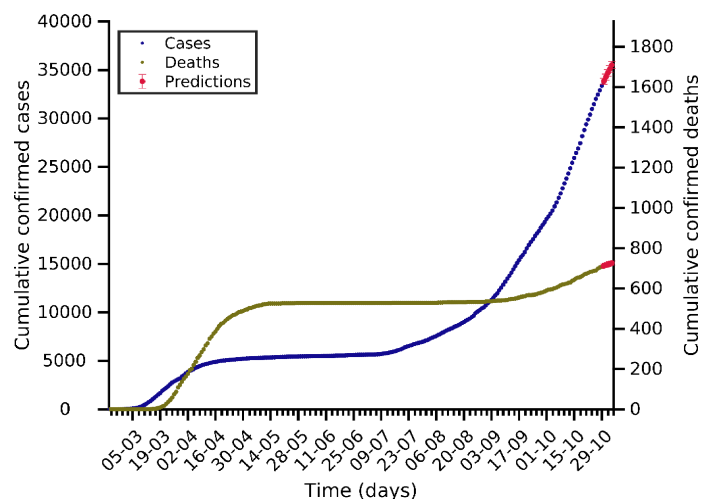
Day	Number of cases	95% Confidence Interval
30-10-2020	36133 (+666)	[35467 - 37117]
01-11-2020	37435 (+653)	[36408 - 38462]
03-11-2020	38754 (+661)	[37632 - 39876]

Current indicators

A ₁₄	EPG	CFR
314	368	2.64 %



Navarra 29-10-2020. Pop: 0.7M. Cumulative incidence: 5101/10⁵

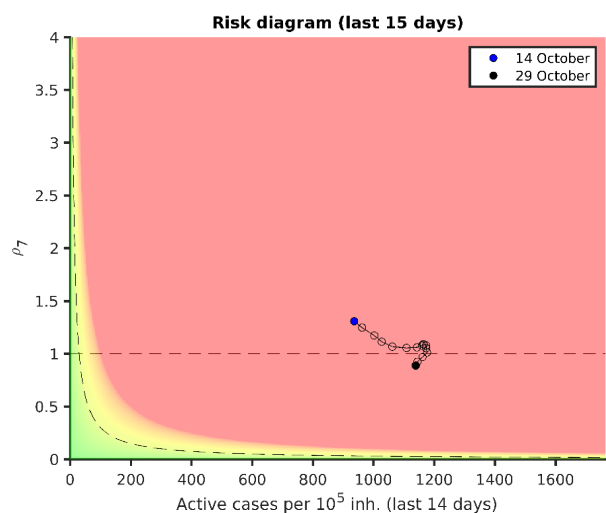
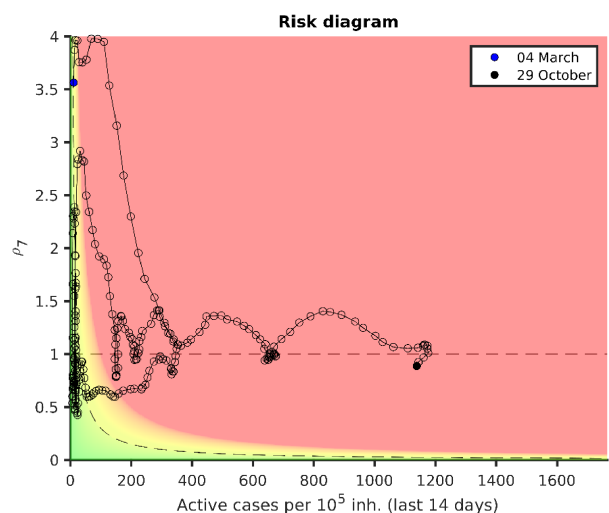
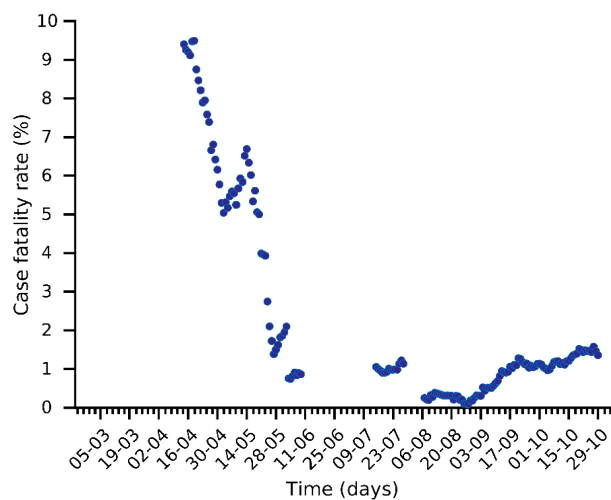
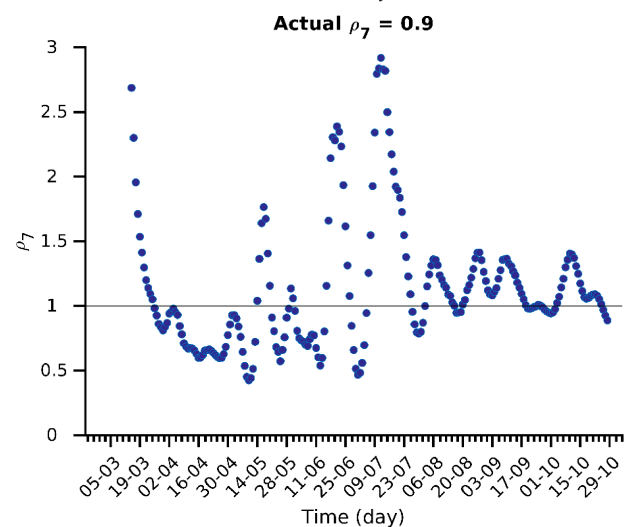
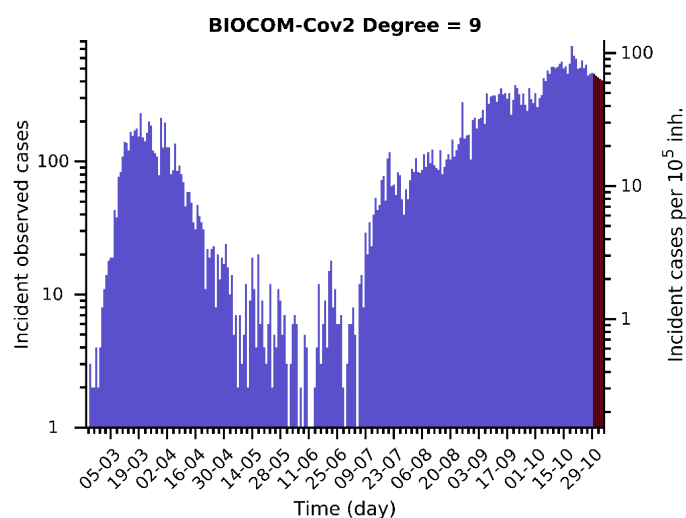
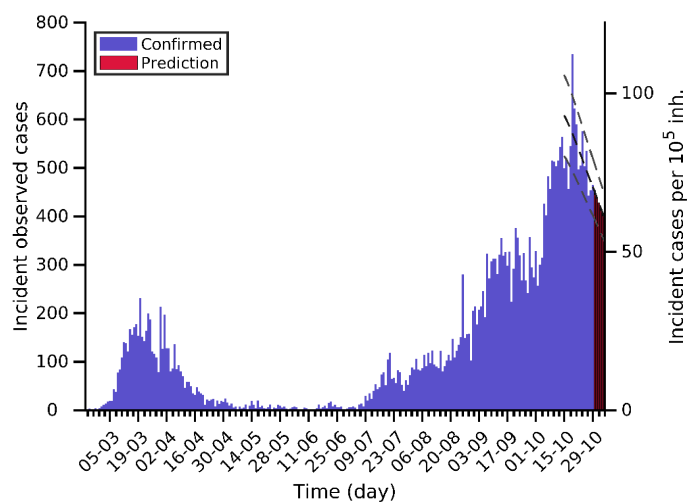


Predictions for next days

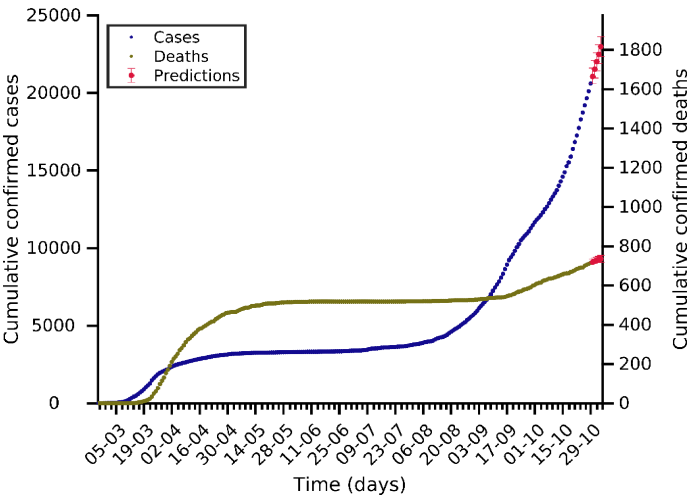
Day	Number of cases	95% Confidence Interval
30-10-2020	33827 (+453)	[33505 - 34149]
01-11-2020	34694 (+428)	[34361 - 35026]
03-11-2020	35516 (+406)	[35162 - 35871]

Current indicators

A ₁₄	EPG	CFR
1139	1011	1.35 %

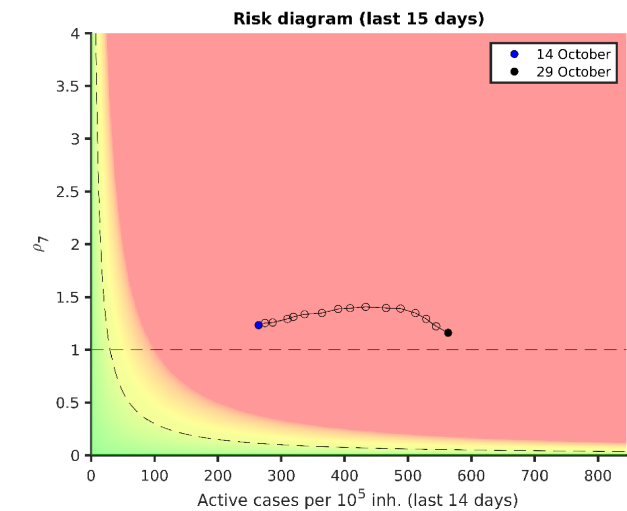
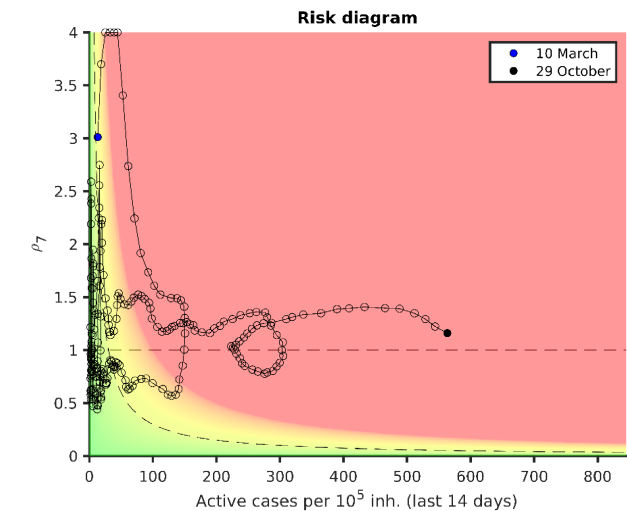
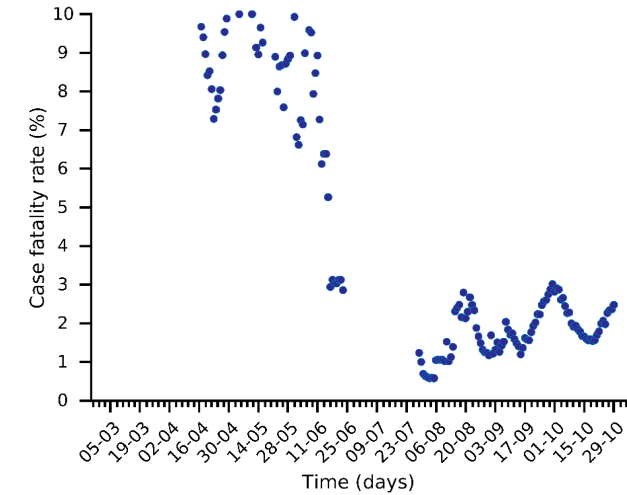
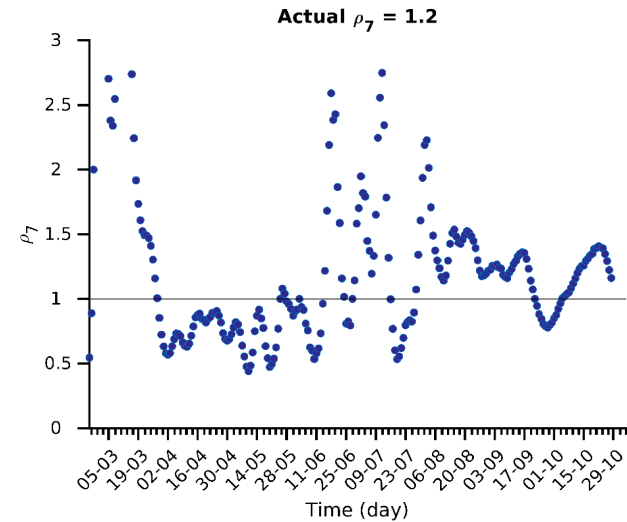
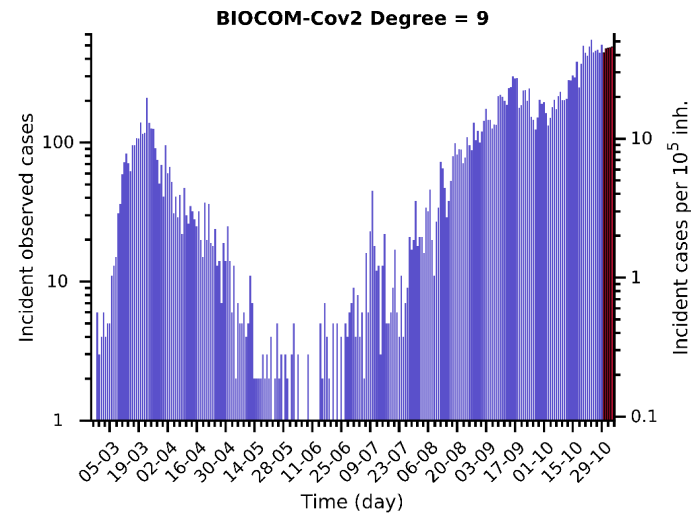
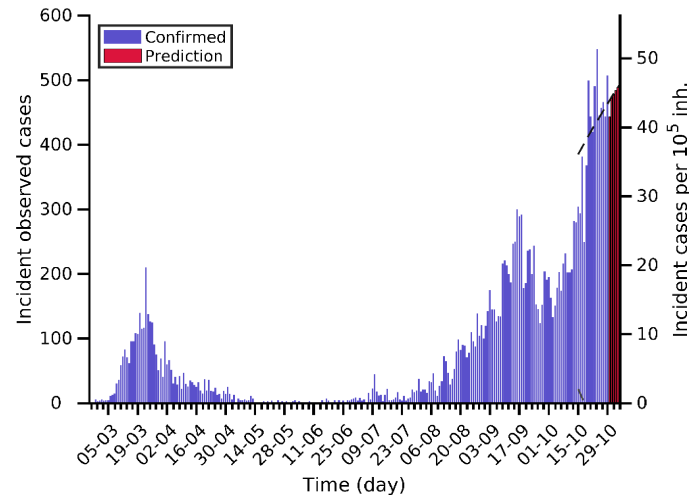


Extremadura 29-10-2020. Pop: 1.1M. Cumulative incidence: 1931/10⁵

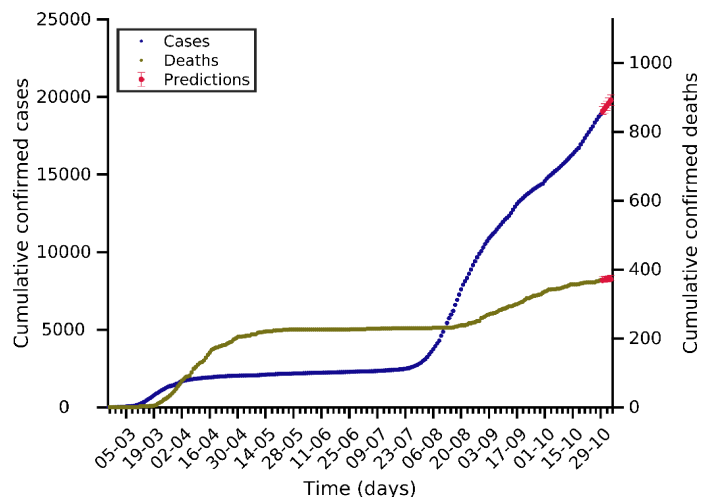


Predictions for next days		
Day	Number of cases	95% Confidence Interval
30-10-2020	21063 (+443)	[20620 - 21621]
01-11-2020	22016 (+479)	[21433 - 22599]
03-11-2020	22988 (+489)	[22348 - 23629]

Current indicators		
A ₁₄	EPG	CFR
563	654	2.47 %



Baleares 29-10-2020. Pop: 1.1M. Cumulative incidence: 1643/10⁵

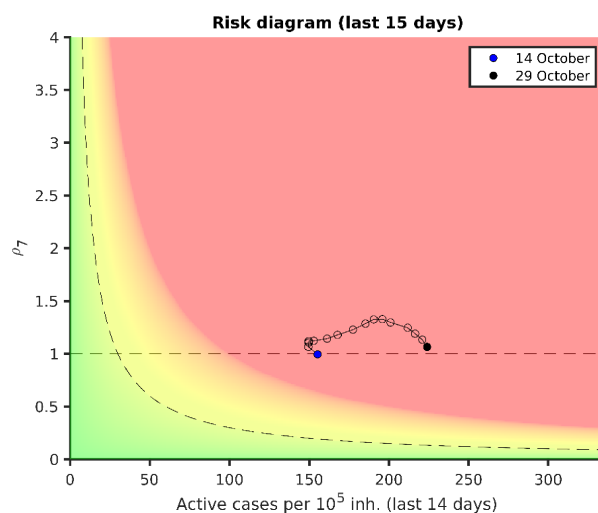
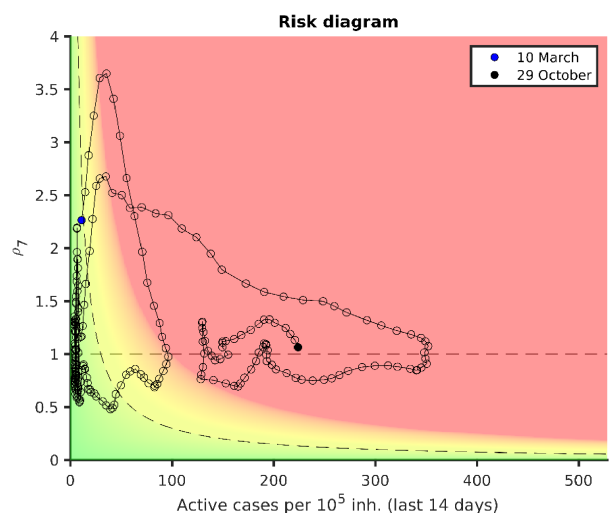
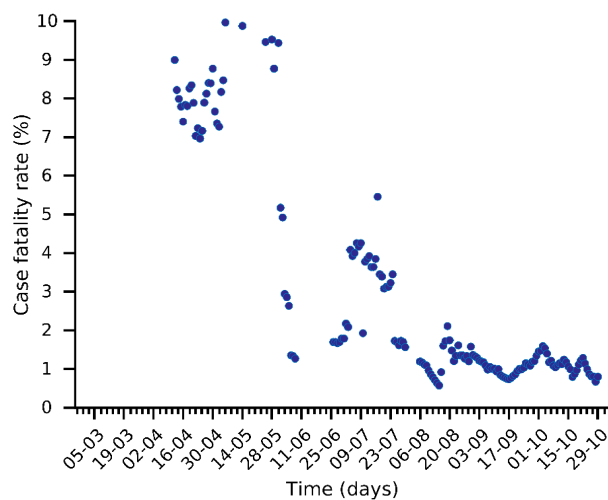
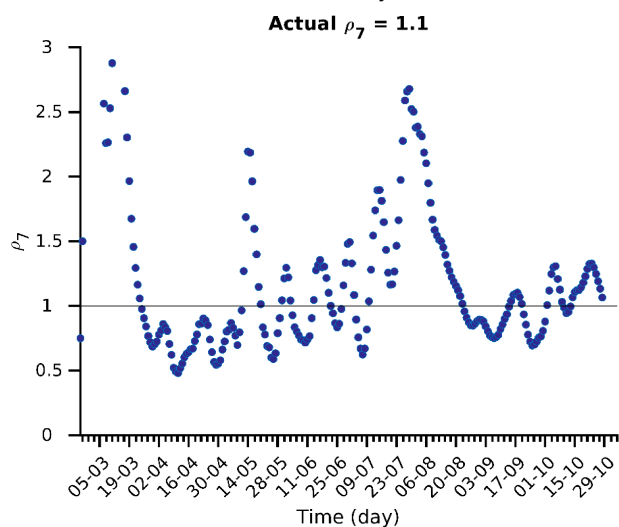
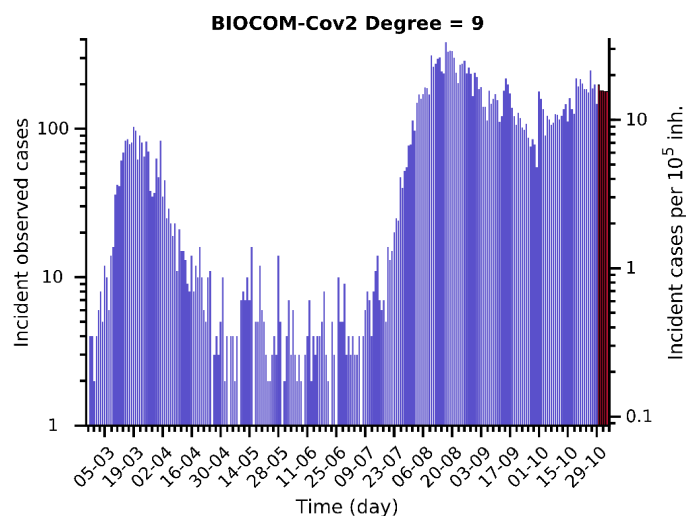
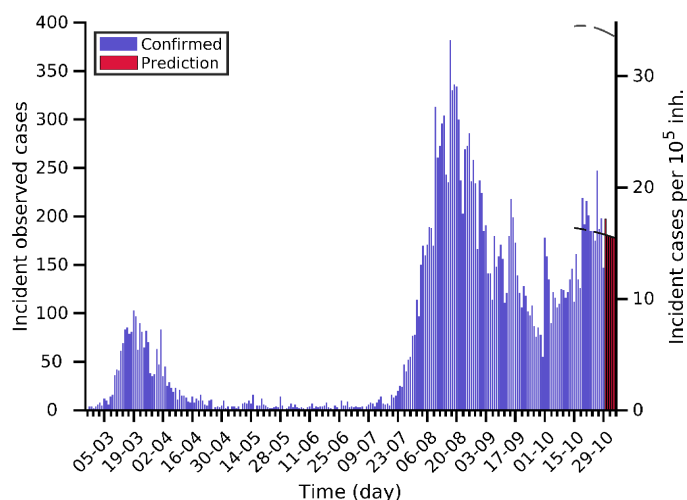


Predictions for next days

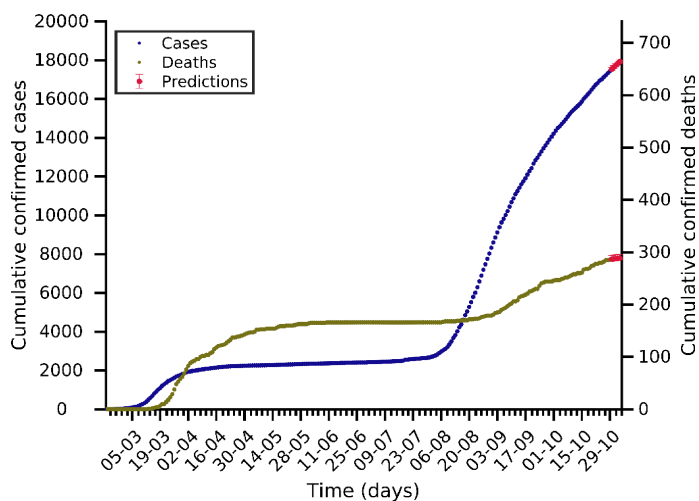
Day	Number of cases	95% Confidence Interval
30-10-2020	19080 (+197)	[18883 - 19383]
01-11-2020	19440 (+180)	[19125 - 19755]
03-11-2020	19797 (+178)	[19457 - 20137]

Current indicators

A ₁₄	EPG	CFR
224	238	0.80 %



Canarias 29-10-2020. Pop: 2.2M. Cumulative incidence: 810/10⁵

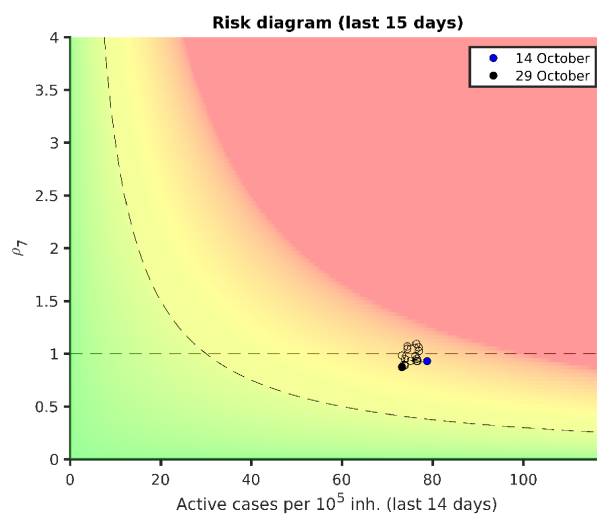
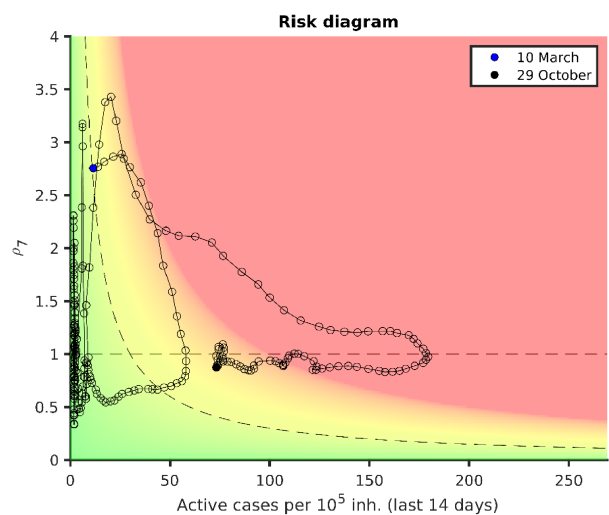
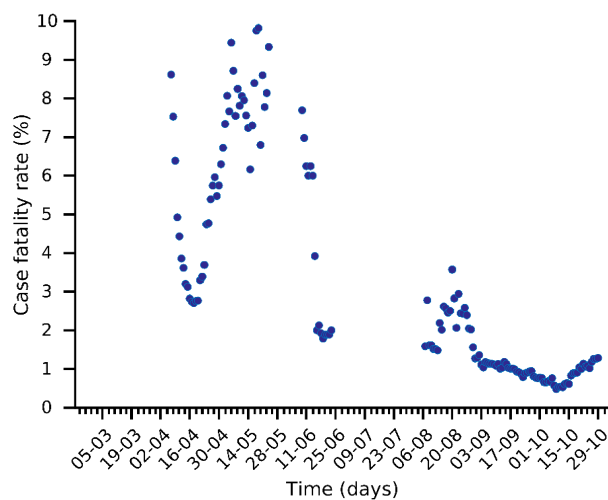
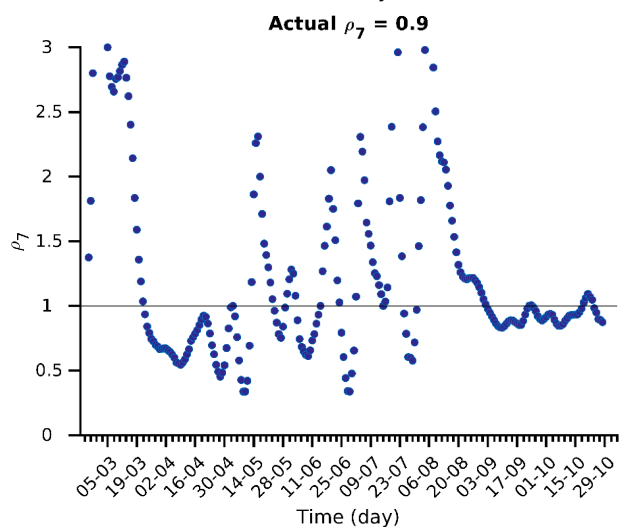
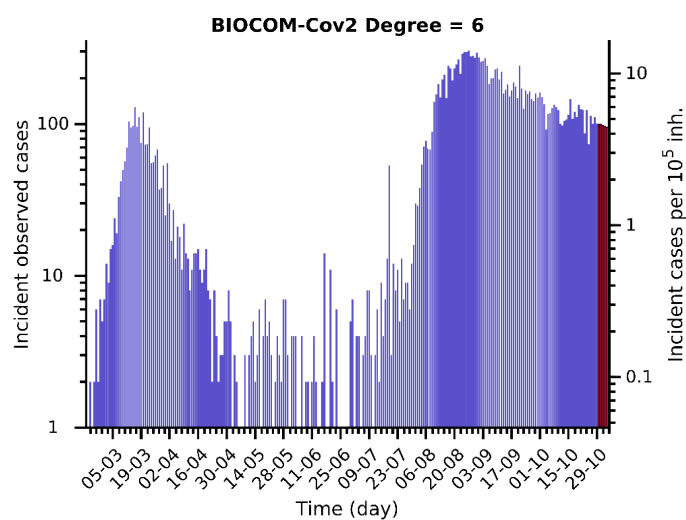
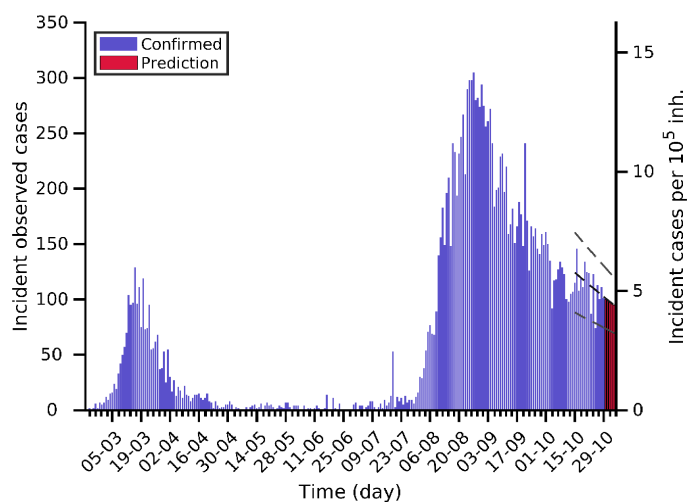


Predictions for next days

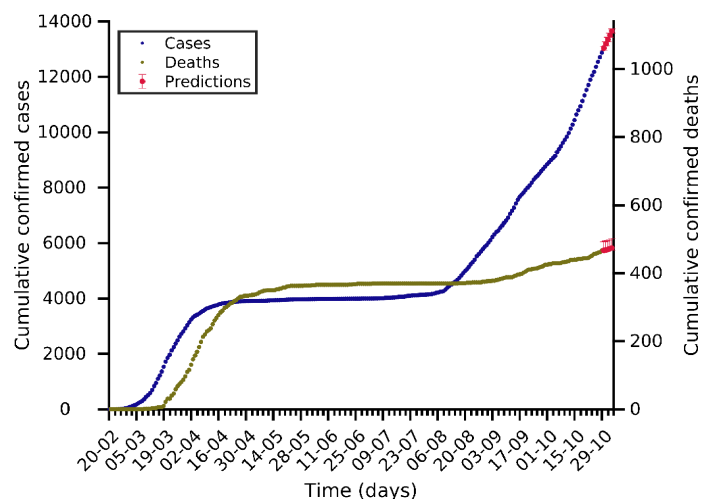
Day	Number of cases	95% Confidence Interval
30-10-2020	17543 (+100)	[17468 - 17618]
01-11-2020	17741 (+98)	[17663 - 17818]
03-11-2020	17932 (+95)	[17850 - 18015]

Current indicators

A ₁₄	EPG	CFR
73	64	1.28 %



La Rioja 29-10-2020. Pop: 0.3M. Cumulative incidence: 4063/10⁵

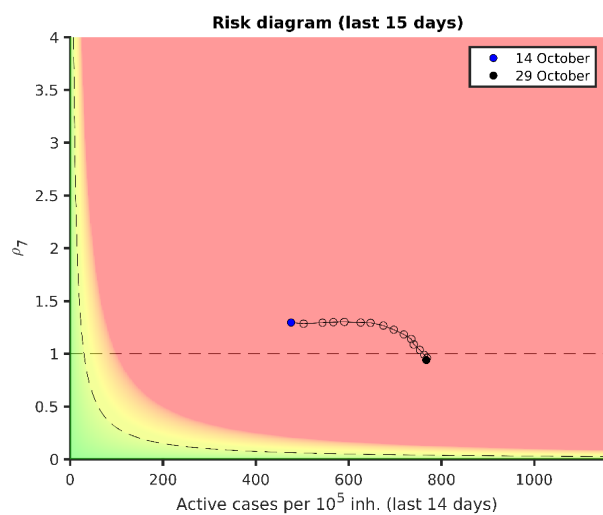
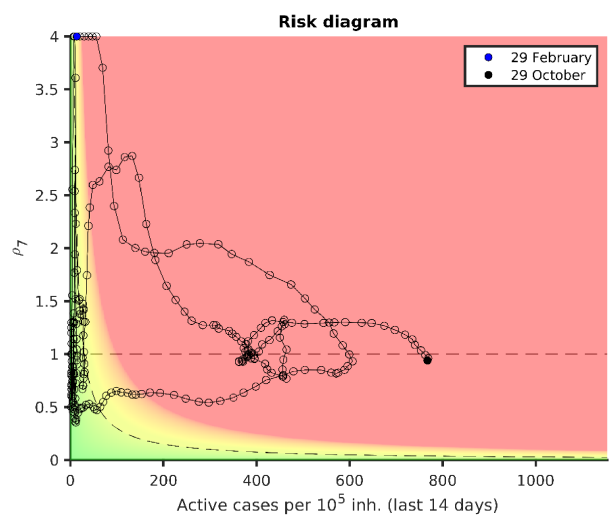
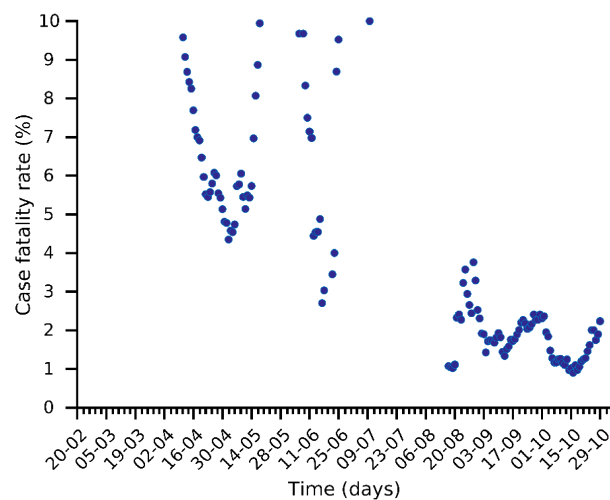
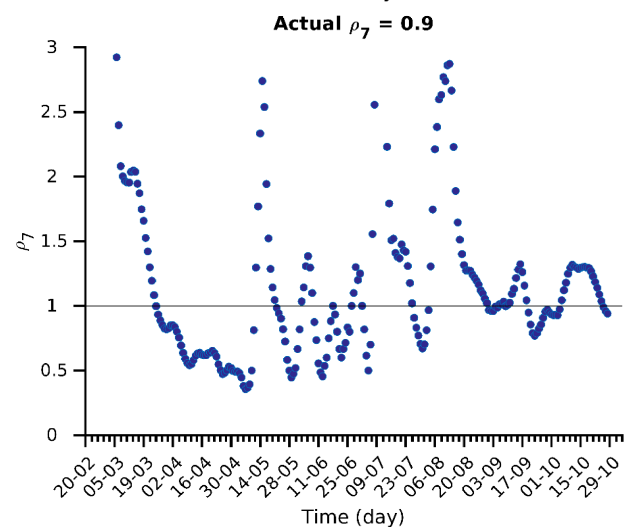
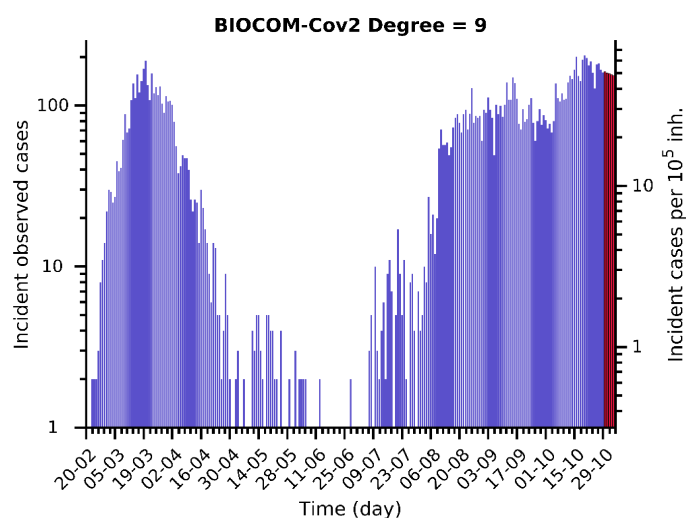
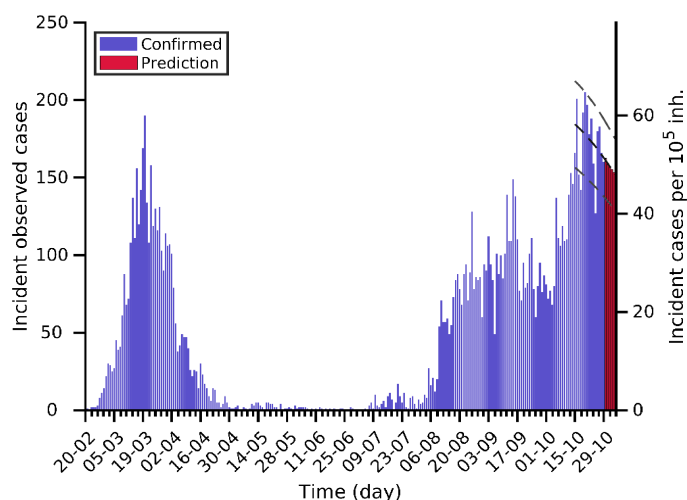


Predictions for next days

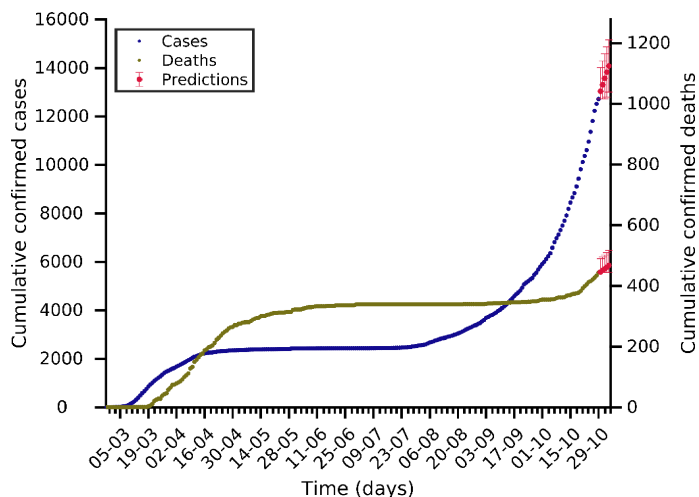
Day	Number of cases	95% Confidence Interval
30-10-2020	13033 (+162)	[12961 - 13106]
01-11-2020	13350 (+157)	[13275 - 13425]
03-11-2020	13658 (+153)	[13578 - 13739]

Current indicators

A ₁₄	EPG	CFR
767	721	2.24 %



Asturias 29-10-2020. Pop: 1.0M. Cumulative incidence: 1243/10⁵

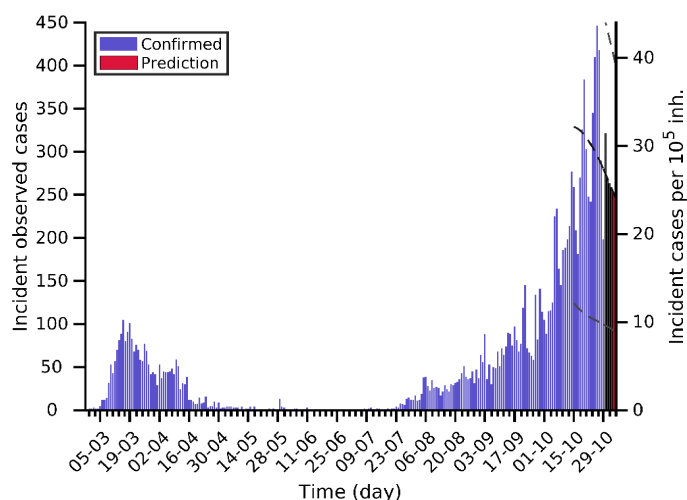


Predictions for next days

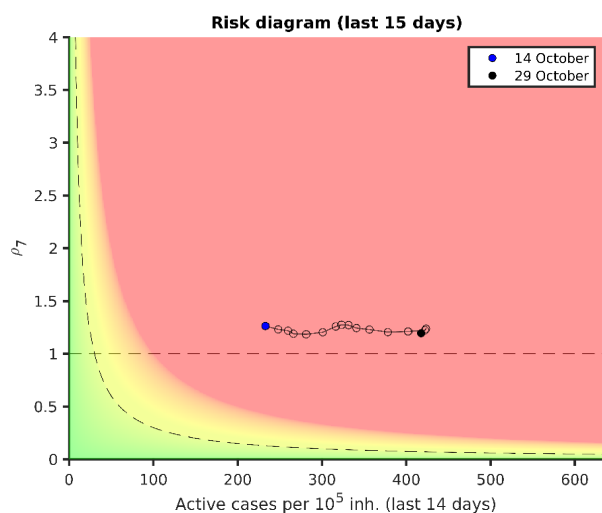
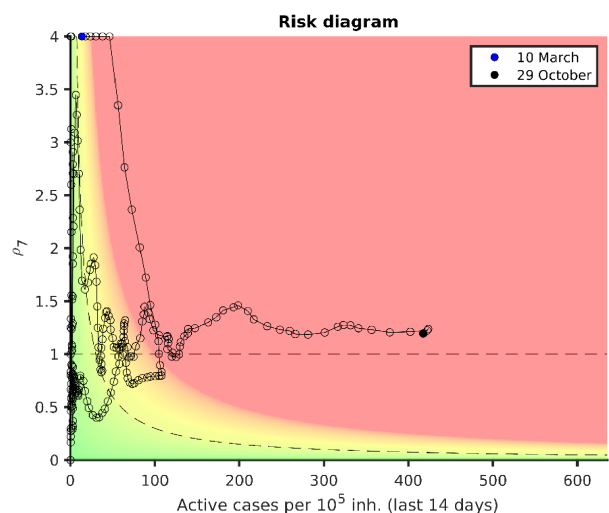
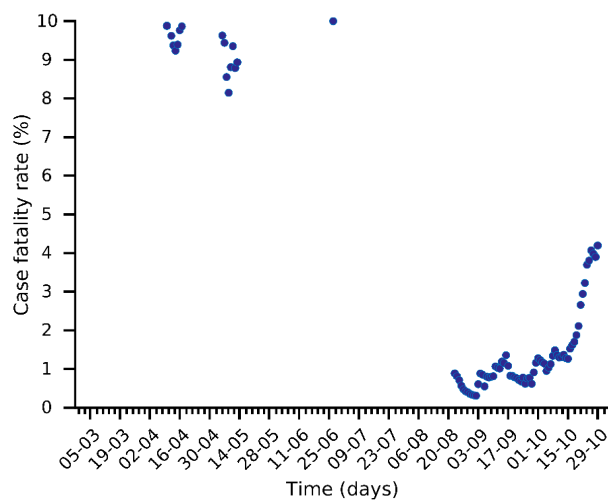
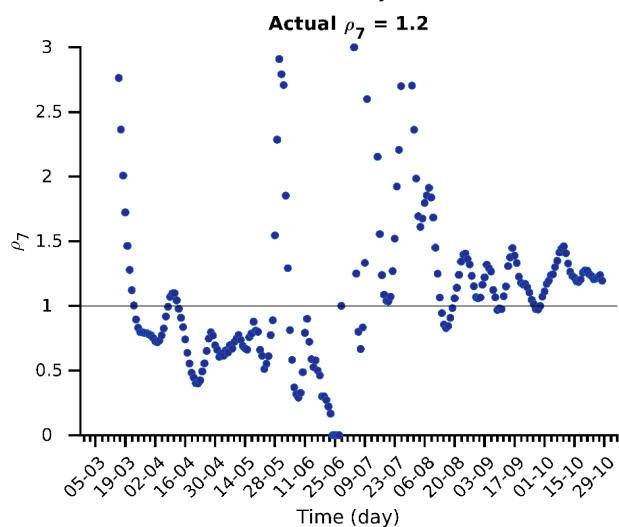
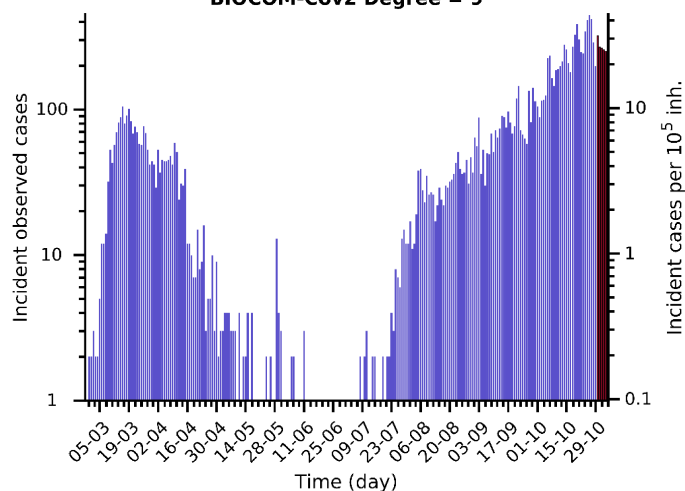
Day	Number of cases	95% Confidence Interval
30-10-2020	13039 (+321)	[12718 - 14010]
01-11-2020	13571 (+263)	[12718 - 14578]
03-11-2020	14080 (+251)	[13001 - 15159]

Current indicators

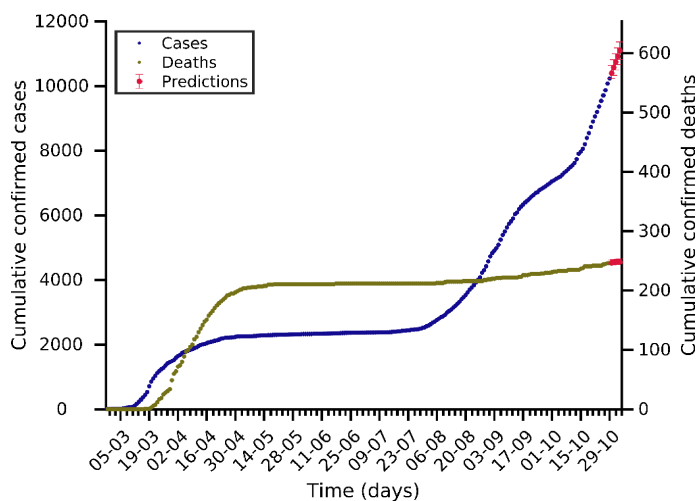
A ₁₄	EPG	CFR
417	499	4.19 %



BIOCOM-Cov2 Degree = 9



Cantabria 29-10-2020. Pop: 0.6M. Cumulative incidence: 1762/10⁵

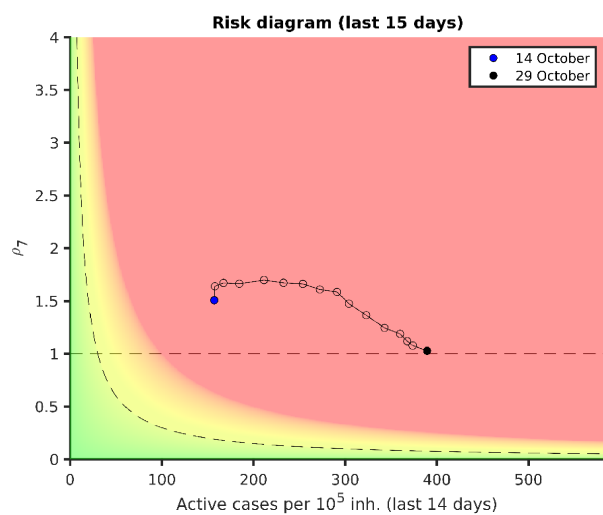
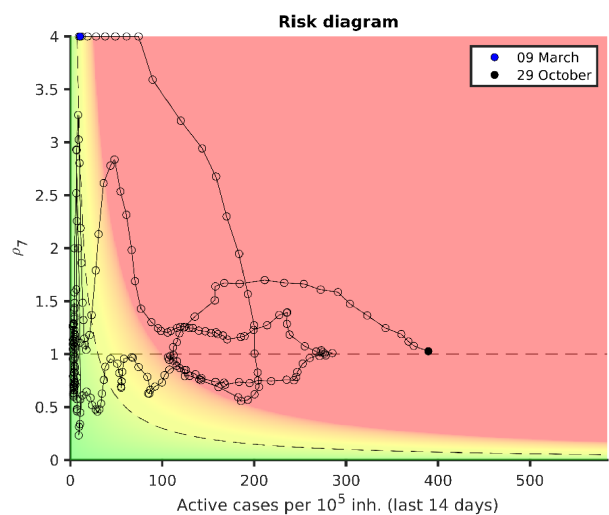
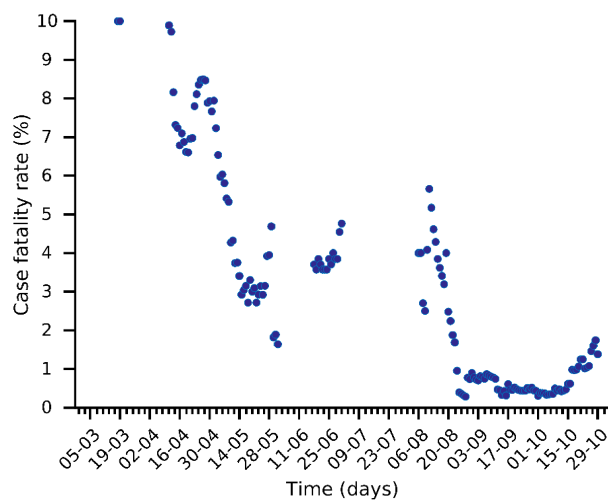
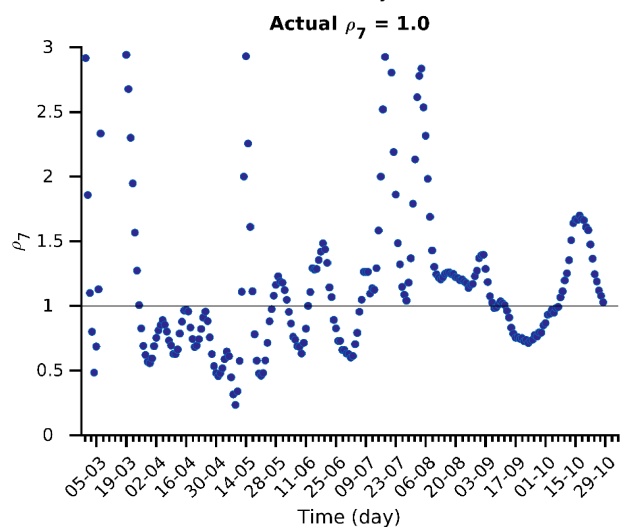
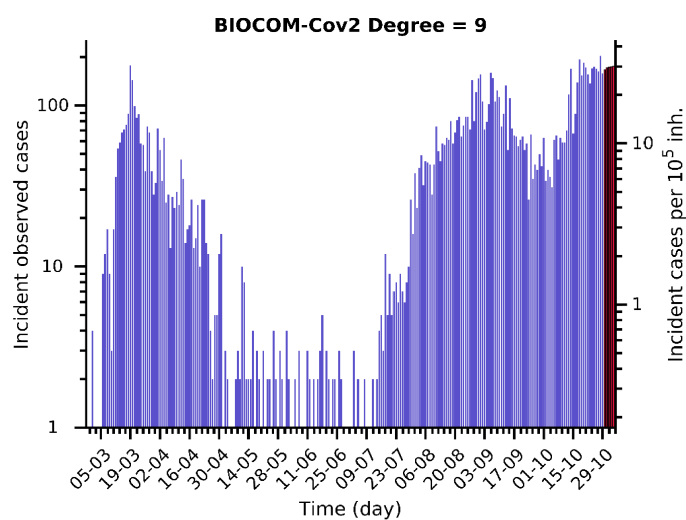
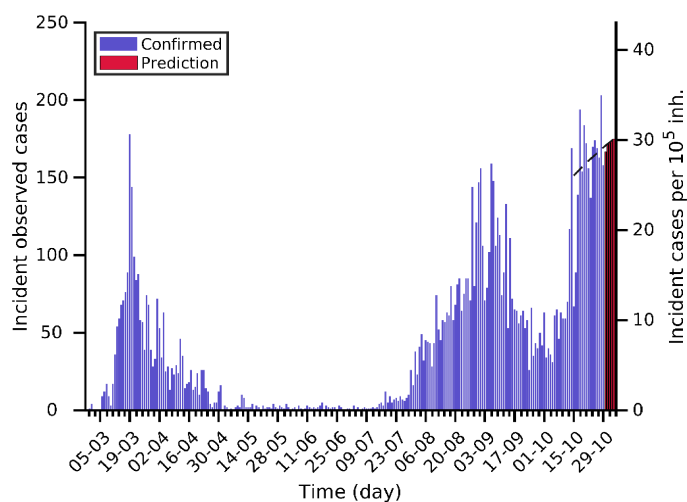


Predictions for next days

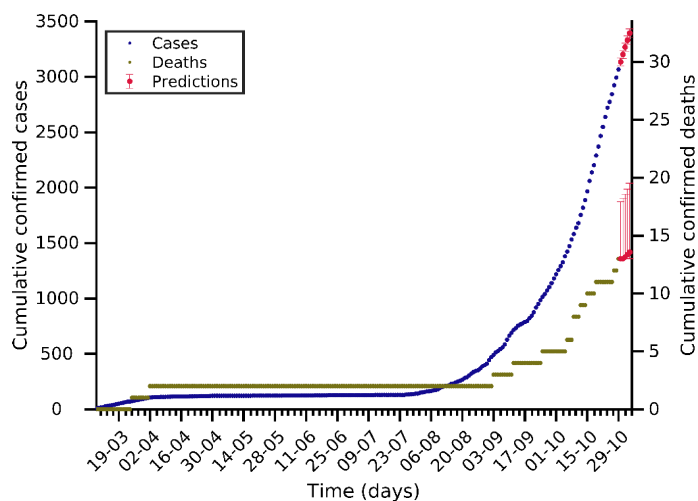
Day	Number of cases	95% Confidence Interval
30-10-2020	10403 (+167)	[10236 - 10641]
01-11-2020	10747 (+173)	[10498 - 10996]
03-11-2020	11096 (+175)	[10824 - 11368]

Current indicators

A ₁₄	EPG	CFR
389	400	1.38 %



Melilla 29-10-2020. Pop: 0.1M. Cumulative incidence: 3546/10⁵

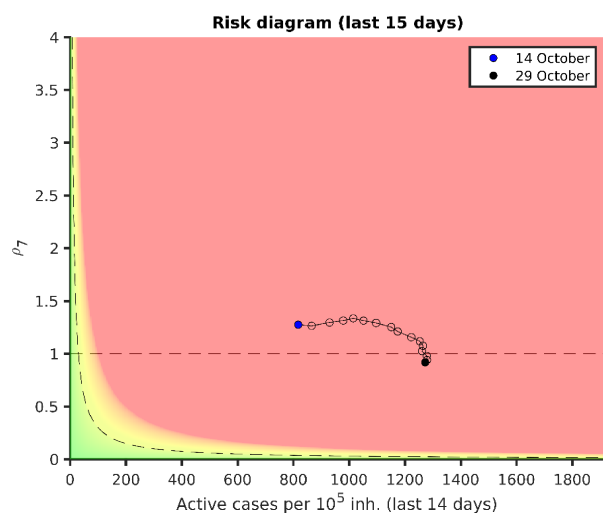
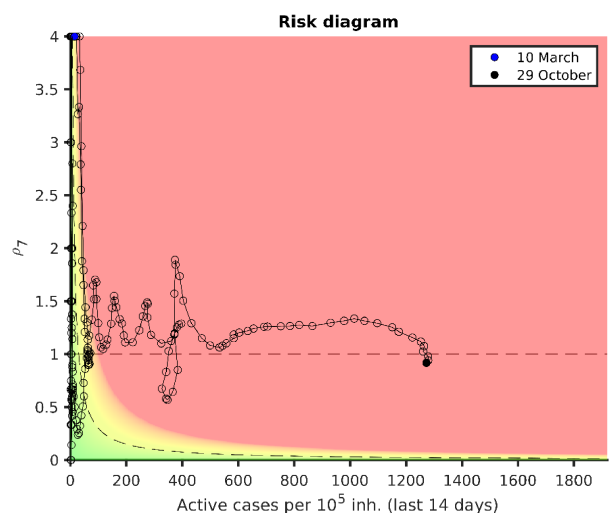
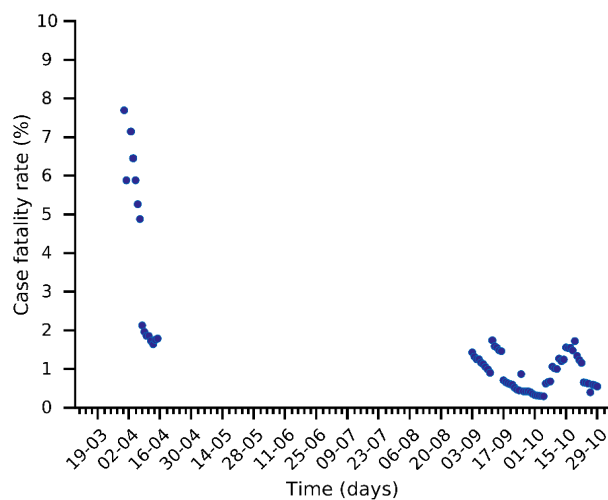
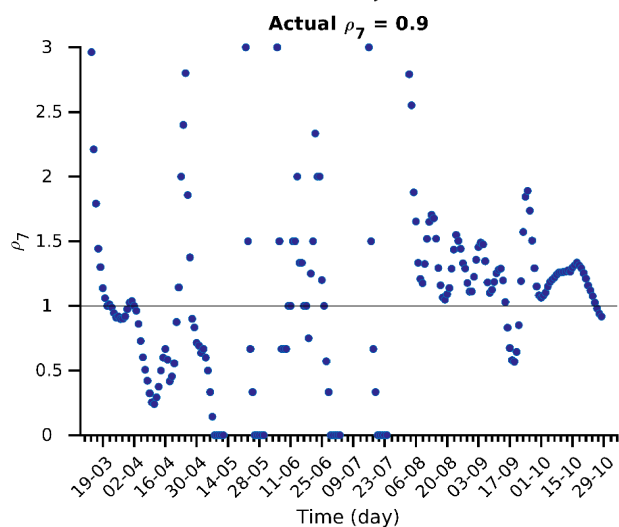
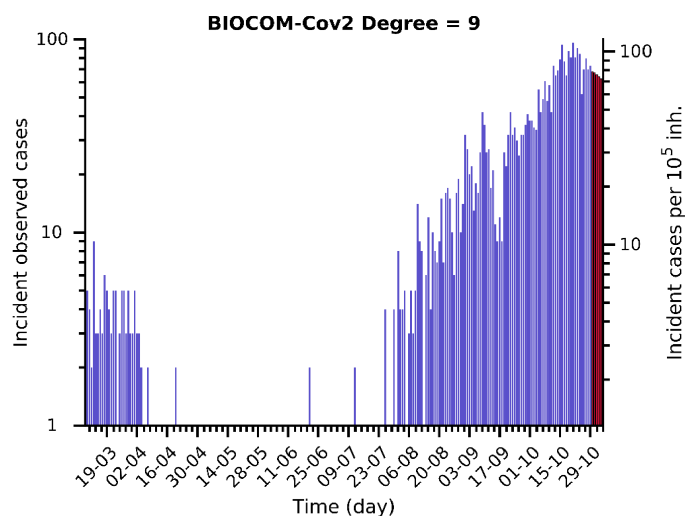
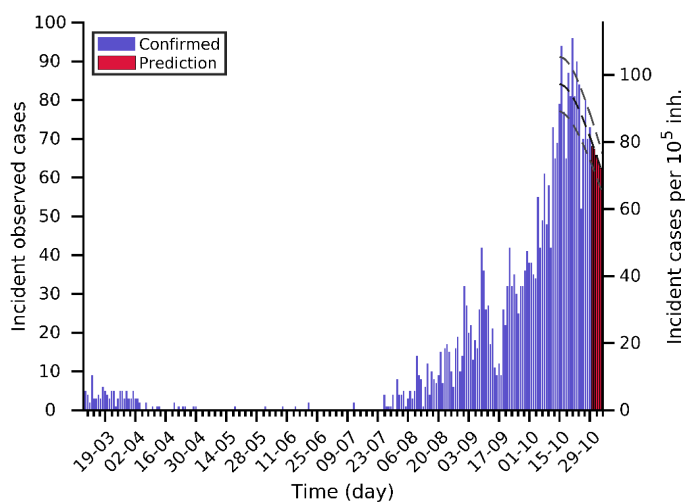


Predictions for next days

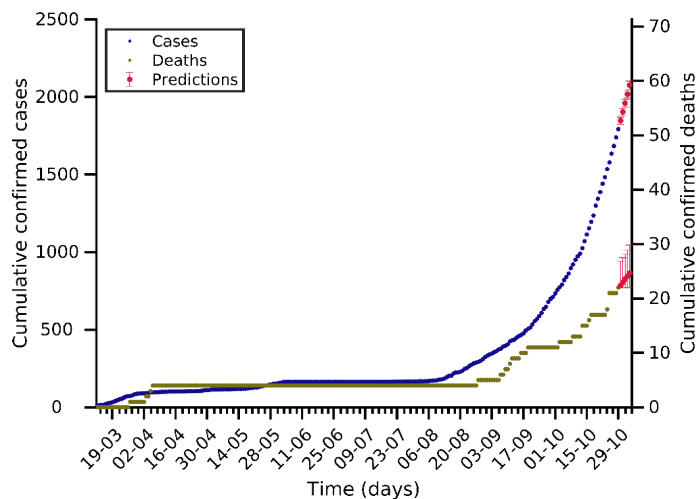
Day	Number of cases	95% Confidence Interval
30-10-2020	3135 (+68)	[3099 - 3171]
01-11-2020	3268 (+66)	[3231 - 3305]
03-11-2020	3395 (+62)	[3355 - 3435]

Current indicators

A ₁₄	EPG	CFR
1272	1167	0.55 %



Ceuta 29-10-2020. Pop: 0.1M. Cumulative incidence: 2115/10⁵

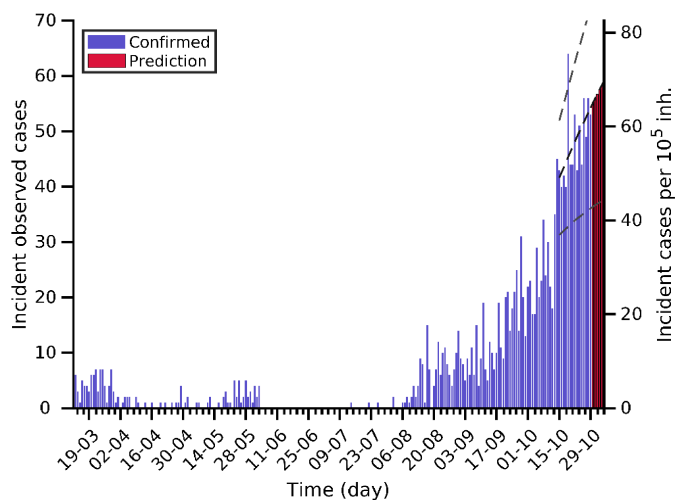


Predictions for next days

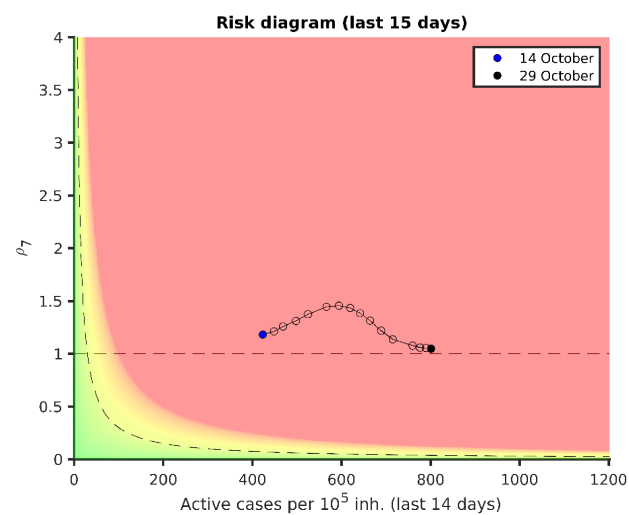
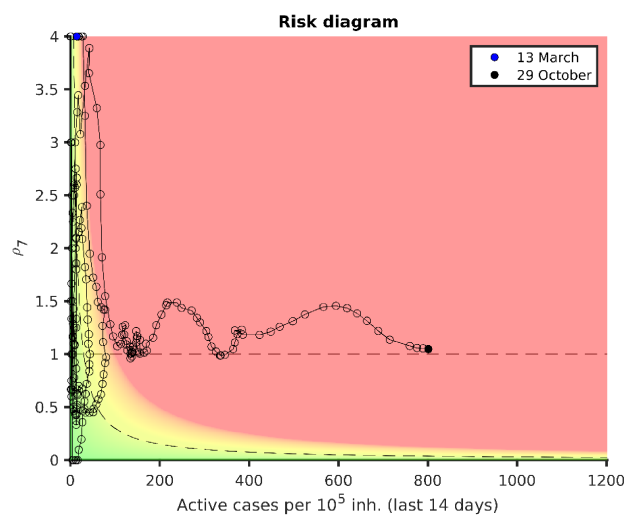
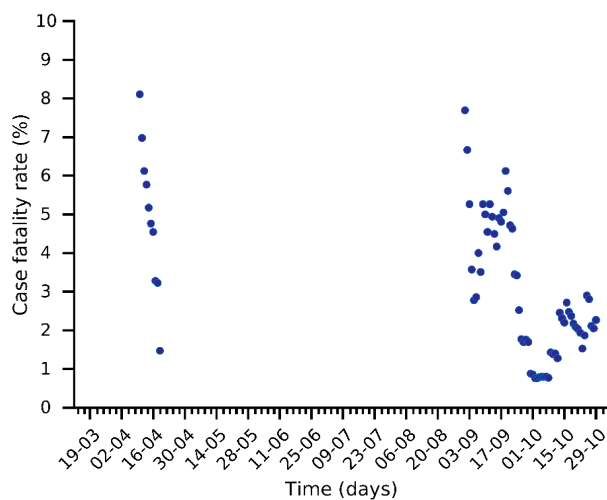
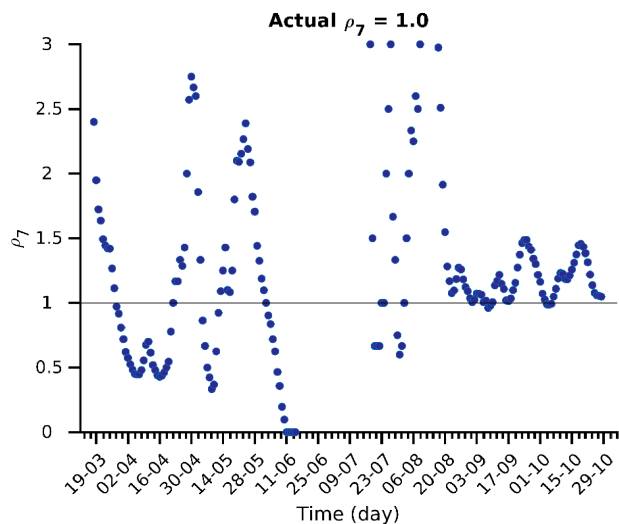
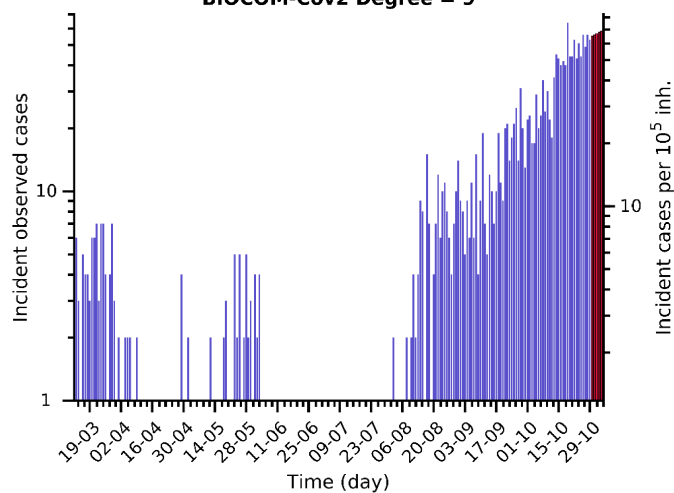
Day	Number of cases	95% Confidence Interval
30-10-2020	1848 (+55)	[1825 - 1871]
01-11-2020	1961 (+57)	[1936 - 1985]
03-11-2020	2076 (+58)	[2049 - 2103]

Current indicators

A ₁₄	EPG	CFR
801	840	2.27 %



BIOCOM-Cov2 Degree = 9



Methods

Methods

(1) Data source

Data are daily obtained from European Centre for Disease Prevention and Control (ECDC)² and country official sources (when indicated). Daily data comprise, among others: total confirmed cases, total confirmed new cases, total deaths, total new deaths. It must be considered that the report is always providing data from previous day. In the document we use the date at which the datapoint is assumed to belong, i.e., report from 15/03/2020 is giving data from 14/03/2020, the latter being used in the subsequent analysis.

(2) Data processing and plotting

Data are initially processed with Matlab in order to update timeseries, i.e., last datapoints are added to historical sequences. These timeseries are plotted for individual countries and for the UE+EFTA+UK as a whole:

- ✓ Number of cumulative confirmed cases
- ✓ Number of reported new cases
- ✓ Number of cumulative deaths

Then, two indicators are calculated and plotted, too:

- ✓ Case fatality rate: number of cumulative deaths divided by the number of cumulative confirmed cases, and reported as a percentage; it is an indirect indicator of the diagnostic level.
- ✓ ρ : this variable is related with the reproduction number, i.e., with the number of new infections caused by a single case. It is evaluated as follows for the day before last report ($t-1$):

$$\rho(t-1) = \frac{N_{new}(t) + N_{new}(t-1) + N_{new}(t-2)}{N_{new}(t-5) + N_{new}(t-6) + N_{new}(t-7)}$$

where $N_{new}(t)$ is the number of new confirmed cases at day t after applying a 7-day moving average to the new cases dataset, so that fluctuations (e.g., weekend effect) are smoothed.

(3) Classification of countries according to their epidemic level: the scale Biocom-Cov

Countries are assigned a degree in the discrete Biocom-Cov scale, which aims to facilitate a simple way of assessing the situation of the country. It is based on the level of daily new cases per 100,000 inhabitants as follows:

Pandemic degree	Daily new incident cases per 10 ⁵ inh.
0	0
1	0-0.1
2	0.1-0.5
3	0.5-1.25
4	1.25-2
5	2-3
6	3-5
7	5-8
8	8-14
9	>14

² <https://www.ecdc.europa.eu/en/geographical-distribution-2019-ncov-cases>

(4) Fitting a mathematical model to data

Previous studies have shown that Gompertz model³ correctly describes the Covid-19 epidemic in all analysed countries. It is an empirical model that starts with an exponential growth but that gradually decreases its specific growth rate. Therefore, it is adequate for describing an epidemic wave that is characterized by an initial exponential growth but a progressive decrease in spreading velocity provided that appropriate control measures are applied. Once in the tail, predictions work but the meaning of parameters is lost.

Gompertz model is described by the equation:

$$N(t) = K e^{-\ln\left(\frac{K}{N_0}\right) \cdot e^{-a \cdot (t-t_0)}}$$

where $N(t)$ is the cumulated number of confirmed cases at t (in days), and N_0 is the number of cumulated cases the day at day t_0 . The model has two parameters:

- ✓ a is the velocity at which specific spreading rate is slowing down;
- ✓ K is the expected final number of cumulated cases at the end of the epidemic.

This model is fitted to reported cumulative cases of the UE and of countries that accomplish two criteria: 4 or more consecutive days with more than 100 cumulated cases, and at least one datapoint over 200 cases. Day t_0 is chosen as that one at which $N(t)$ overpasses 100 cases. If more than 15 datapoints that accomplish the stated criteria are available, only the last 15 points are used. The fitting is done using Matlab's Curve Fitting package with Nonlinear Least Squares method, which also provides confidence intervals of fitted parameters (a and K) and the R^2 of the fitting. At the initial stages the dynamics is exponential and K cannot be correctly evaluated. In fact, at this stage the most relevant parameter is a .

It is worth to mention that the simplicity of this model and the lack of previous assumptions about the Covid-19 behaviour make it appropriate for universal use, i.e., it can be fitted to any country independently of its socioeconomic context and control strategy. Then, the model is capable of quantifying the observed dynamics in an objective and standard manner and predicting short-term tendencies.

(5) Using the model for predicting short-term tendencies

The model is finally used for a short-term prediction of the evolution of the cumulated number of cases (3-5 days). The confidence interval of predictions is assessed with the Matlab function `predint`, with a 99% confidence level. These predictions are shown in the plots as red dots with corresponding error bar. For series longer than 9 timepoints, last 3 points are weighted in the fitting so that changes in tendencies are well captured by the model.

(6) Estimating non-diagnosed cases

Lethality of Covid-19 has been estimated at around 1 % for Republic of Korea and the Diamond Princess cruise. Besides, median duration of viral shedding after Covid-19 onset has been estimated at 18.5 days for non-survivors⁴ in a retrospective study in Wuhan. These data allow for an estimation of total number of cases, considering that the number of deaths at certain moment should be about 1 % of total cases 18.5 days before. This is valid for estimating cases of countries at stage II, since in stage I the deaths would be mostly

³ Madden LV. Quantification of disease progression. *Protection Ecology* 1980; **2**: 159-176.

⁴ Zhou et al., 2020. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *The Lancet*; March 9, doi: 10.1016/S0140-6736(20)30566-3

due to the incidence at the country from which they were imported. We establish a threshold of 50 reported cases before starting this estimation.

Reported deaths are passed through a moving average filter of 5 points in order to smooth tendencies. Then, the corresponding number of cases is found assuming the 1 % lethality. Finally, these cases are distributed between 18 and 19 days before each one.